Amber Waves

contents

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Economic Research Service/USDA

FINDINGS

FEATURES

Amber Waves **ONLINE**

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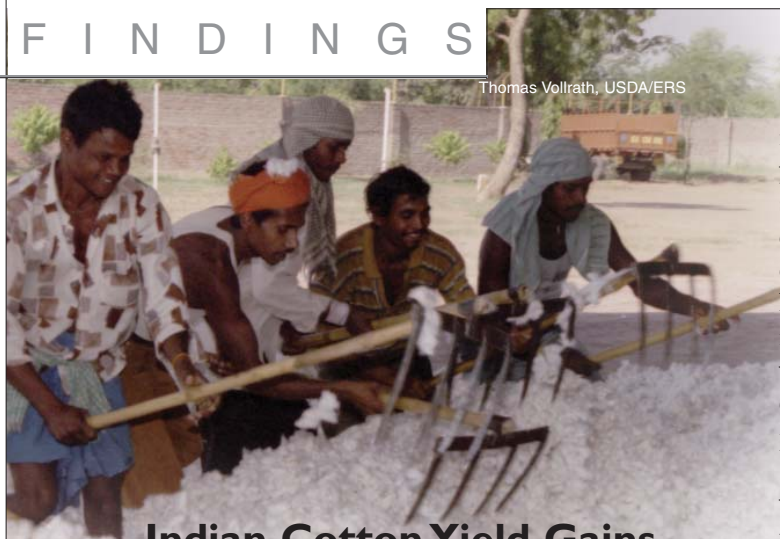


Thomas Vollrath, USDA/ERS

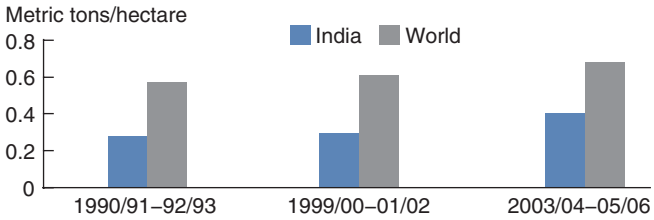
Indian Cotton Yield Gains Could Limit Imports

Adoption of hybrid *Bacillus thuringiensis* (Bt) cotton by Indian farmers is helping to boost cotton yields and may dampen growth in the cotton that India imports to meet the needs of its expanding textile industry. Bt cotton varieties are genetically engineered to include a gene (from the soil bacterium *Bacillus thuringiensis*) that enables the plant to produce its own natural toxins to defend against bollworms and certain other pests. Bt cotton hybrids were first approved for cultivation in India in 2002 and, by the 2004/05 crop year, Bt cotton accounted for 17 percent of India's cotton area—some 1.5 million hectares. The pace of adoption and yield gains appear poised to accelerate. During May-June 2005, 14 new Bt varieties were approved, including the first-ever varieties for heavily irrigated areas in North India.

Although it is too soon to be sure of overall impacts, Bt cotton adoption appears likely to increase yields significantly. Recent region-specific studies in India found that Bt hybrids improved yields by 45-87 percent. The yield gains reported in India contrast sharply with the U.S. experience, where the primary impact of Bt cotton has been reduced costs. The main reason for the difference is that Indian cotton farmers—most of whom operate small holdings with limited resources—typically do not practice optimal pest control. By controlling boring insects, Bt varieties provide significant yield gains. Cost savings relative to non-Bt varieties appear less substantial for Indian farmers because Bt seed prices are relatively high compared with non-Bt seeds.

The scope is broad for increasing cotton yields in India, where yields are below the world average and the lowest of the top-10 global producers. Although Bt technology does not address some important yield constraints, including erratic rainfall, use of uncertified seeds, and poor cultivation practices, improved pest protection appears to be having an impact. Damage from bollworms is a key yield constraint in all producing regions of India, particularly the heavily irrigated and potentially high-yielding areas of North India.

Growth in Indian cotton yields is accelerating



Source: USDA Production, Supply, and Distribution database.

U.S. Could Expand Apple Exports to Japan

The World Trade Organization (WTO) recently ruled that part of Japan's phytosanitary protocol for imports of U.S. apples was not justified and was in breach of Japan's WTO obligations. The Japanese phytosanitary protocol for apples included restrictive rules for inspection, buffer zones, and chemical surface disinfection, procedures that are not normally part of the U.S. *systems approach* to phytosanitary management. The systems approach uses a combination of risk-mitigating measures that individually and cumulatively reduce the risk of the target diseases or pests to an insignificant level. Almost all countries accept the U.S. systems approach to disease and pest management for apple exports as an adequate precaution to protect their domestic industries. In 2004, the United States exported apples to 85 countries.

With strict phytosanitary rules severely restricting apple imports, Japan has relied on its domestic production to satisfy consumer demand. Japanese apple prices tend to be high, and per capita apple consumption is among the lowest in developed economies, 5.9 kilograms (13 pounds) a year between 1991 and 2003. That was 73 percent of average U.S. per capita consumption—8.1 kilograms (18 pounds)—and less than one-third of the 17.9 kilograms (39 pounds) consumed on average in the European Union. Japanese consumers often eat apples as a dessert, with one apple, often a Fuji apple, divided among several diners. They do not tend to eat them as snacks as do U.S. consumers. However, Japanese tastes may not be static. Japanese consumers may be open to U.S. sweet apple varieties or even traditional tart apples, and U.S. growers might be able to build a Japanese market over time.

On August 25, 2005, Japan issued new regulations eliminating the procedures that were the subject of the U.S. complaint. As a result, U.S. growers could have new opportunities to supply the Japanese market. Using an economic model of the Japanese apple market, ERS has estimated what Japanese imports would have been without the restrictive phytosanitary protocol. The analysis gives an indication of the longrun potential of U.S. apple sales to

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Because India's 8-9 million hectares of cotton area is by far the largest of any country in the world, yield gains could significantly affect global markets. Rising incomes in India and increased exports of cotton-based textiles associated with the end—in January 2005—of developed-country import quotas under the Multi-Fiber Arrangement (MFA) are now boosting growth in India's demand for domestic and imported cotton. India is among several developing, textile-producing countries expected to increase their shares of global textile trade in the post-MFA environment. If India can supply more of its expanding textile sector with domestically produced cotton, opportunities for the United States and other cotton exporters will decline.

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This finding is drawn from . . .

Growth Prospects for India's Cotton and Textile Industries, by Maurice Landes, Stephen MacDonald, Santosh K. Singh, and Thomas Vollrath, CWS-05d-01, USDA, Economic Research Service, June 2005, available at: www.ers.usda.gov/publications/cws/jun05/cws05d01/

Japan. It suggests that, with the elimination of the protocol, Japanese consumers would increase their per capita consumption of apples by about 11 percent to 6.4 kilograms, still below U.S. per capita consumption. The additional imports would significantly affect the U.S. apple industry.

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This finding is drawn from . . .

Resolution of the U.S.-Japan Apple Dispute: New Opportunities for Trade, by Linda Calvin and Barry Krissoff, FTS-318-01, USDA, Economic Research Service, October 2005, available at: www.ers.usda.gov/publications/fts/oct05/fts31801/


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Mandatory Livestock Price Reporting: More Transparent?

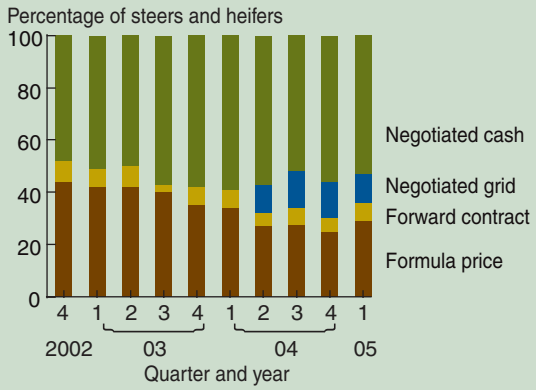
The USDA *Market News* program aims to aid the efficient marketing of agricultural commodities by providing the public with price and sales information drawn from transactions around the country. But fundamental changes in livestock industries called into question the effectiveness of *Market News* reporting for livestock and led to a major redesign of the program through the Livestock Mandatory Reporting Act of 1999 (LMR). A recent ERS report reviews developments leading up to the Act and assesses its impact on cattle markets after implementation in 2001.

Before 2001, USDA *Market News* reporters gathered data voluntarily submitted by market participants and by observation at public markets. But more and more livestock are now being marketed under contract arrangements that often bind producers and packers to formal long-term relationships and set sales terms well before delivery of the animals for slaughter. Because contract terms were rarely reported under the voluntary system, USDA's *Market News* reports of the late 1990s were based on a declining number of transactions. Producers expressed concern that unreported contract prices were substantially higher than the cash prices reported in *Market News* and that *Market News* prices based on a small number of transactions could be more easily manipulated. Some feared that cash markets for livestock would disappear without timely, comprehensive, and accurate price reporting. Because many contracts base payments on cash market prices, cash market erosion concerned all market participants.

Under LMR, large meatpackers electronically file summary information on all transactions twice a day, and USDA compiles the information in its *Market News* reports. By early 2002, the program was capturing more than 90 percent of all cattle sales, compared with less than 60 percent in the last days of the voluntary system. LMR enables users to compare prices for cattle sold under different marketing methods. It appears that, for cattle of similar quality, prices in negotiated spot market transactions closely track prices for cattle sold under contracts. In other words, producers selling under contract do not seem to realize a significant price advantage.

Many producers initially expressed disappointment with LMR, partly because of implementation problems and partly because the data did not show that contract prices were higher. But producers now appear to be using the cash market more: After 2002, cattle sales shifted away from contracts and toward negotiated cash market transactions. While that shift may have been driven by other market developments—such as low inventories and strong demand—that raised all cattle prices, it also may have been affected by expanded and more transparent price reporting under LMR.

Volume of cattle sold through negotiated transactions has increased, but market forces may be the driver



Note: Negotiated grid transactions were introduced in the second quarter of 2004.
Source: USDA's Agricultural Management Service's *Datamart*.

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This finding is drawn from . . .

Did the Mandatory Requirement Aid the Market? Impact of the Livestock Mandatory Reporting Act, by Janet Perry, James MacDonald, Ken Nelson, William Hahn, Carlos Arnade, and Gerald Plato, USDA, Economic Research Service, LDP-M-135-01, available at: www.ers.usda. gov/publications/ldp/sep05/ldpm13501/


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Going With the Grain:

Consumers Responding to New Dietary Guidelines

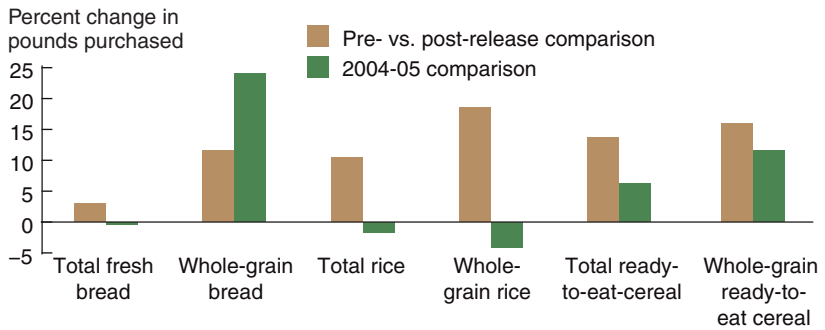
The 2005 *Dietary Guidelines for Americans*, released in January, recommend that half of all daily grain servings come from whole-grain foods. These recommendations mark a significant departure from past recommendations, which made no distinction between whole and refined grains.

USDA has been providing dietary advice for over a century. Since 1980, however, recommendations on attaining adequate nutrition also included information about how and why to avoid overconsumption of nutrients like saturated fat, cholesterol, and sodium, linked to chronic diseases. Consumption patterns during this period suggest that consumers modify their food choices in response to a variety of factors, including increased information about the links between diet and health. According to ERS food availability data between 1980 and 2003, Americans reduced their consumption of red meats, such as beef, in favor of leaner meats, such as chicken and turkey. They also more than doubled their intake of skim milk, while drinking half as much whole milk.

Early indications suggest that Americans may likewise be eating more whole grains. To gauge shoppers' initial response to the new *Guidelines*, ERS examined whole-grain purchases over an 8-week period immediately following the *Guidelines'* January 12 release. ERS compared the purchases with those over the previous 8 weeks, as well as with those over the same 8-week period in 2004 to control for seasonal spikes.

Although low-carbohydrate dieters may still shy away from certain grain products, the popularity of whole-grain products appears to be rising. In the 8 weeks after the release of the *Guidelines*, the average shopper purchased about 13 percent more pounds of whole-grain products than during the same period in 2004. When we compared the 8 weeks before and after the release, we found that shoppers bought nearly 12 percent more whole-grain breads, 19 percent more whole-grain rice, and 16 percent more whole-grain ready-to-eat breakfast cereals. These increases may be a result of changes in dietary awareness. In addition, shoppers now have more whole-grain foods from which to choose; in 2004 alone, nearly 100 new products touted their whole-grain formulations. Shoppers can now find a variety of whole-grain pastas at mainstream grocery stores, white breads made from whole-grain flour, and reformulated, whole-grain breakfast cereals.

Whole-grain purchases rise after release of 2005 *Dietary Guidelines*



Source: Calculated by USDA, Economic Research Service using ACNielsen Homescan data.

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This finding is drawn from . . .

Food Market Dynamics and USDA's New Dietary Guidelines, by Ephraim Leibtag and Lisa Mancino, EIB-5, USDA, Economic Research Service, September 2005, available at: www.ers.usda.gov/publications/eib5/

U.S. Food Consumption Up 16 Percent Since 1970

America's growing girth has focused attention on what—and how much—we as a Nation have been eating. The ERS food consumption (per capita) data series, one of the few series tracking long-term consumption, suggests that Americans are eating more food every year. The total amount of food available for each person to eat increased 16 percent from 1,675 pounds in 1970 to 1,950 pounds in 2003. This increase was not isolated to a few food groups. Fruits and vegetables also showed an increase.

The increase in food available for consumption resulted in a corresponding jump in calories, from 2,234 calories per person per day in 1970 to 2,757 calories in 2003 (after adjusting for plate waste, spoilage, and other food losses). Per capita consumption of fats and oils, grains, vegetables, and sugars/sweeteners led the way. Between 1970 and 2003, total per capita consumption of added fats and oils rose by 63 percent, grain consumption by 43 percent, vegetable consumption by 24 percent, and sugar and sweetener consumption by 19 percent. Annual corn sweetener consumption increased to 79 pounds in 2003, up 400 percent from 1970. This steep rise in corn sweetener consumption is largely due to high-fructose corn syrup, a low-cost substitute for sugar in beverages.

Even with the mid-1990s push to cut dietary fat, added fats and oils accounted for an extra 216 calories per person per day—or 42 percent of the 523-calorie increase between 1970 and 2003. Grains and sugars contributed 188 and 76 added calories. Only in dairy products did daily calories decline (11 calories), partly due to the switch from whole to low-fat milk.

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The ERS Food Consumption (Per Capita) Data System, available at: www.ers.usda.gov/data/foodconsumption/


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Average daily calorie intake grew by 523 calories

Commodity group	Per capita consumption 1970	2003	Increase in pounds, 1970-2003	Increase in daily calories, 1970-2003
	Pounds		*Percent*	*Number*
Fats and oils	53	86	63	216
Grains	136	194	43	188
Sugar and sweeteners	119	142	19	76
Meat, eggs, and nuts	226	242	7	24
Vegetables	337	418	24	16
Fruits	242	275	12	14
Dairy	564	594	5	-11
Total	1,675	1,950	16	523

The ERS per capita data represent the amount of food and calories available for consumption after adjusting for spoilage, plate waste, and other losses in the home or marketing system.

Stable Farm Count Masks Turnover

Ken Hammond, USDA

The U.S. farm count has been relatively stable in recent decades. The net decline in farm numbers totaled 185,000—or 6 percent—between the 1974 and 2002 Censuses. The small net change, however, masks substantial turnover in farms. About 40 percent of U.S. farms exit the farm sector (that is, go out of business) between agricultural censuses, which are taken every 5 years. Entrance rates are similar and also fairly high, between 31 and 37 percent, partially offsetting exits. ERS researchers examined trends in exit rates using data from the 1997 Census of Agriculture Longitudinal File.

In creating the longitudinal file, USDA's National Agricultural Statistics Service merged data for individual farms from several censuses. The longitudinal file follows individual farm businesses associated with farmland, rather than operators. Thus, when an adult child takes over from a retiring operator, the farm is classified as a survivor rather than as an exit. Nevertheless, life-cycle changes can trigger farm exits. In a common pattern, farm operators become elderly, stop farming, and rent or sell their farmland to others who incorporate the farmland into their operations. The original farm business no longer exists.

Exit rates vary substantially by farm size (measured by annual sales) and by the age of the farmer. Exit rates decline as farm size increases, but 25-30 percent of the largest farms—those with sales of $250,000 or more—still exit between censuses. The exit rate hits bottom for farms with operators 45 years old, then increases, and peaks at more than 40 percent for farms with an operator at least 65 years old. Additional factors (besides the operator's age and farm size) may influence a farm's likelihood of exit, most notably the operator's prior farming experience.

Annualized U.S. farm exit rates (not accounting for offsetting farm entry) are about 9-10 percent per year. These rates are comparable to exit rates for Canadian farms, after adjusting exit rates for differences in the size distribution of farms in the two countries. Also, the U.S. farm exit rates are within 1 percentage point of those for all U.S. small nonfarm businesses with no employees. In general, small businesses have a high exit rate, and most farms are small businesses.

Net exit rate masks high turnover in farms

Note: The base for calculating exit and entrance rates is the number of farms at the beginning of the period. Part of the increase in the entrance rate between 1992 and 1997 occurred because of a minor change in the farm definition. After adjusting for the definition change, the net exit rate was 4.6 percent, still less than the earlier declines.

Source: USDA, Economic Research Service analysis of the 1997 Census of Agriculture Longitudinal File.

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For more information . . .

Structural and Financial Characteristics of U.S. Farms: 2004 Family Farm Report, edited by David E. Banker and James M. MacDonald, AIB-797, USDA, Economic Research Service, March 2005, available at: www.ers.usda.gov/publications/aib797/

The Questions and Answers Page of the ERS Farm Structure Briefing Room, available at: www.ers.usda.gov/briefing/farmstructure/questions/farmnumbers.htm

Patenting and Licensing Are Tools for Technology Transfer

Corbis & PhotoDisc

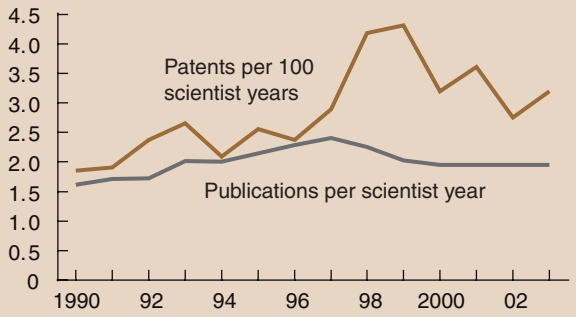
Public sector research generates scientific and technical knowledge that is needed to meet important challenges in today's agriculture. When researchers at USDA's Agricultural Research Service (ARS) make a discovery with commercial potential, ARS finds ways to transfer the technology to the private sector. Sometimes ARS makes its discoveries available in scientific journals for firms to use. Other times, ARS obtains patents on the technology and licenses use of the patent to one or more companies.

An objective of public sector research is to distribute its benefits as widely as possible. Although patents restrict the use of a technology, they are consistent with the objective of transferring technology for a number of reasons. When a technology is difficult to commercialize or requires additional development, patents that limit competition for a period of time provide companies with a greater incentive to take the necessary next steps. Patents have other uses, too: They can raise awareness of public research results and attract interest from potential technology partners. Patents might even be used defensively, establishing a clear right for licensees to use Federal research when other firms hold patents on similar technologies.

An additional advantage of patents in technology transfer is that they generate licensing revenues. But those revenues were probably not a major motivation for ARS patenting, since licensing revenues in 2000 were less than one-half of 1 percent of USDA's research budget. Furthermore, more widespread use of patenting and licensing by ARS has not reduced the use of traditional instruments of technology transfer, such as scientific publication. From 1990 through 2003, the ratio of publications to scientific personnel has remained fairly steady, even though patents and technology licenses increased in the mid to late 1990s.

Once the decision has been made to patent and license a technology, the structure of the licensing agreement affects technology transfer outcomes. For example, ARS can issue licenses to multiple firms to speed technology development, but segmenting the market geographically or by field of use might provide greater incentives for private sector participation than an agreement in which all licensees compete for the same market niche. The ability of ARS to revisit terms of some licensing agreements can also contribute to technology transfer. As commercial partners gain experience with the technology and learn more about its market, mutually advantageous revisions to license terms can maintain the incentives through which private companies distribute the benefits of public research.

Patenting increases but not at the expense of publications



Source: U.S. Patent and Trademark Office; Institute for Scientific Information Current Contents; USDA Current Research Information System.

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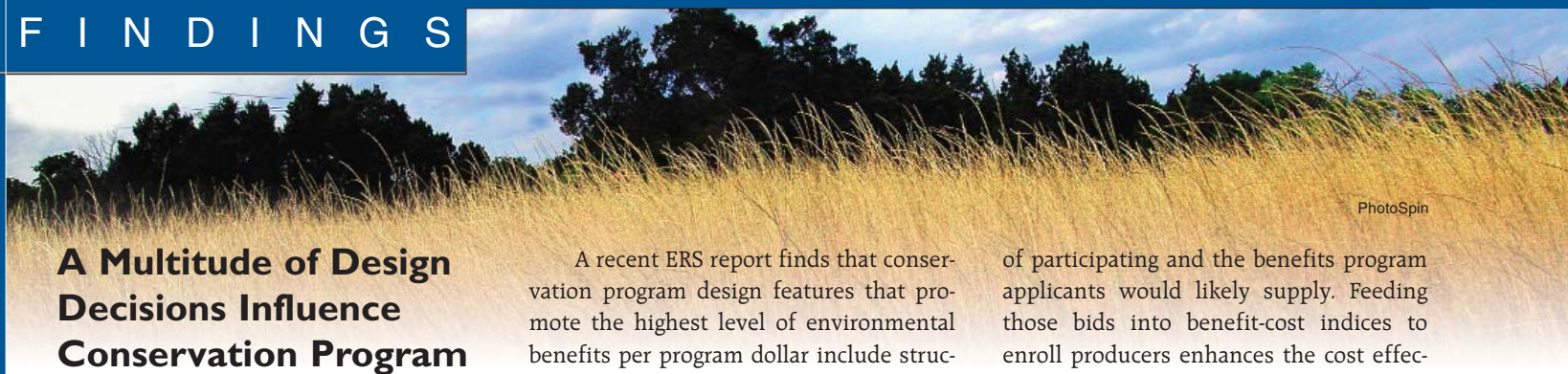
For more information . . .

The ERS Agricultural Research and Productivity Briefing Room, www.ers.usda.gov/briefing/agresearch/



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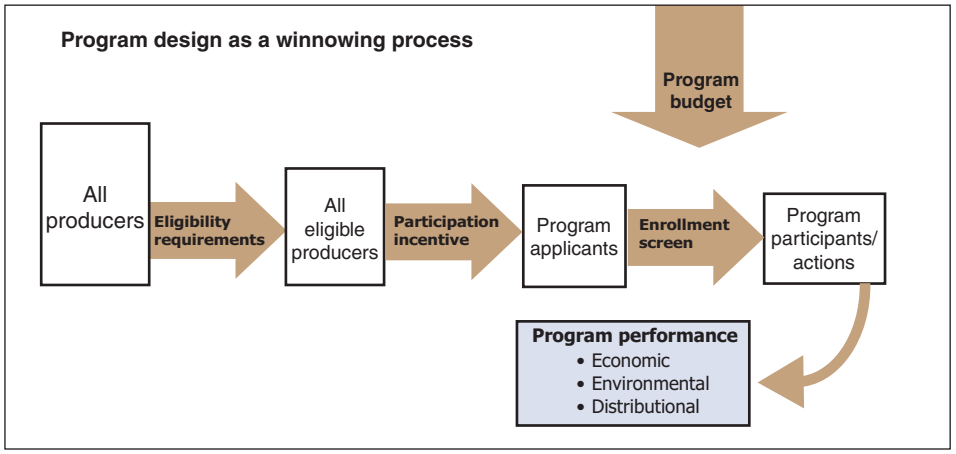
A Multitude of Design Decisions Influence Conservation Program Performance

Designing a voluntary conservation program requires several types of decision criteria to encourage farmers to apply and to determine who can participate in the program. These decisions act as a winnowing process, starting with all farmers and ranchers and resulting in a pool of program participants. *Eligibility requirements* determine which producers can apply, based on type of farm (e.g., crops versus livestock), resource concerns (e.g., erodible lands), or geographic locations. *Participation incentives* (payment levels) specify what actions (e.g., application of a conservation practice) or levels of environmental performance qualify for payments and how large the payments will be. Payment rates can be fixed or set by bidding. *Enrollment screens* determine which applicants are accepted: They range from first-come, first served to the use of a benefit-cost index to rank applications by expected performance. Once these design decisions are made, most actions by program managers to meet program objectives are locked in place.

A recent ERS report finds that conservation program design features that promote the highest level of environmental benefits per program dollar include structuring the application process for enrolling farm operators as a "request for proposals," including the benefits and costs of enrollment; establishing a bidding process for financial assistance; and using a benefit/cost ranking to select program enrollees. ERS research exploring specific aspects of program design highlights the many tradeoffs involved:

- Achieving environmental and income objectives with a single program involves tradeoffs in terms of which goal is emphasized. Conservation programs can support farm income but at a potential cost in terms of environmental gains. Commodity programs can be made "greener" but likely will not fix every agri-environmental problem or do so efficiently.
- "Targeting" conservation efforts through eligibility requirements, participation incentives, or enrollment screens can be used to focus payments on fields, practices, or specific resource concerns most likely to generate the greatest environmental benefits.
- Bidding—a process in which farmers compete in an auction for conservation payment contracts—can reveal the costs of participating and the benefits program applicants would likely supply. Feeding those bids into benefit-cost indices to enroll producers enhances the cost effectiveness of conservation programs.
- Programs that retire land award payments based on different actions than those focused on working lands, resulting in different benefits and tradeoffs. Land retirement generally provides greater environmental benefits (per contract acre) but at a higher cost than a working land program, in which land remains in production.
- Similarly, paying farmers to adopt specific conservation practices and paying for the level of environmental performance are two different approaches with distinct benefits. Paying for performance is more cost effective than paying for practices because program incentives are directly linked to the environmental indicator of interest. However, agri-environmental performance is not easily observable, so performance-based payments are difficult and costly to implement. Practice-based payments that increase with expected benefits may be a practical compromise.

Cost effectiveness, environmental performance—the level and types of environmental gains delivered by the program—and the distribution of program benefits can vary widely according to the package of decisions ultimately made about eligibility, participation incentives, and enrollment screening.



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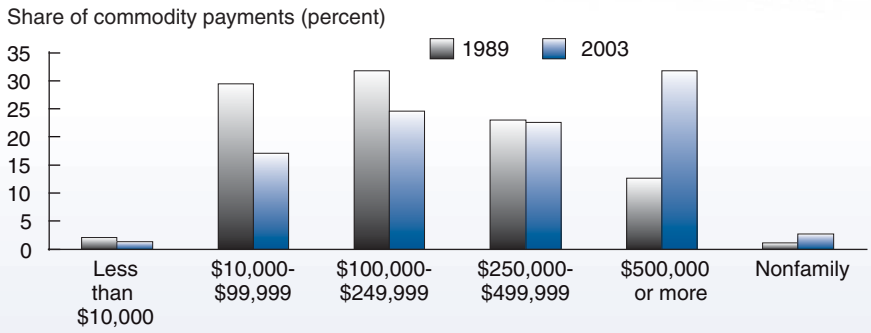
This finding is drawn from . . .

Flexible Conservation Measures on Working Land, by Andrea Cattaneo, Roger Claassen, Robert Johansson, and Marca Weinberg, ERR-5, USDA, Economic Research Service, June 2005, available at: www.ers.usda.gov/publications/err5/

Financial Assistance to Farmers Is Evolving

Government commodity payments are shifting to larger farms



Source: USDA s Agricultural Resource Management Survey.

Several key farm attributes drive the amount of commodity-based assistance received by farmers. Those attributes include land ownership and tenure, as well as current and past production of eligible commodities. But other broad factors also affect how assistance is distributed among households. In particular, major ongoing changes in farming are transforming how payments are distributed among farms and the links between incomes and assistance.

The U.S. Government has long provided financial assistance to farmers, with payments averaging $17 billion a year since 1999. From the 1930s through the 1950s, assistance largely took the form of commodity supply controls and price supports, which provided assistance by raising the prices that farmers received for their commodities. Today's payments, like those of the past, are mostly commodity based, but assistance has steadily shifted away from price supports and toward payments made directly to farmers.

In the early days of farm programs, average farm household incomes fell well below household incomes for the rest of the population. Few farmers worked off the farm, very few held full-time off-farm jobs, and individual farms produced a variety of crops and livestock. Assistance targeted at the production of eligible crops consequently flowed to many farms, and largely went to low- and middle-income households.

The economic status of farm households is much different now. Over half of farm operators hold off-farm jobs, and, among these, 70 percent hold full-time jobs, most while maintaining a limited farming operation. Average farm household incomes match or exceed incomes for other U.S. households, and the incidence of poverty among farm households is comparable to the rate for all other U.S. households. Furthermore, farm households tend to have higher levels of wealth than other U.S. households.

Farms are much more specialized than those of decades past, often producing just one or a very few commodities. Consequently, direct payments are concentrated among regions and among farms that specialize in eligible commodities. Because many farmers rent farmland and equipment, some payments are passed through to landowners as land rental prices are bid up, and some may be passed through to equipment providers. With this pass-through, some program benefits flow to nonfarm households.

Among farms that receive payments, few depend on them for a substantial share of household income. Furthermore, farm production is shifting to much larger farms, and because commodity payments follow production, they are increasingly directed to high-income households. Only a small share of government commodity payments now goes to low-income households.

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For more information . . .

The Question and Answer Page of the ERS Farm Structure Briefing Room, www.ers.usda.gov/briefing/farmstructure/questions/changesinfarmstructure.htm

How Much Time Do Americans Spend Preparing and Eating Food?

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Eyewire

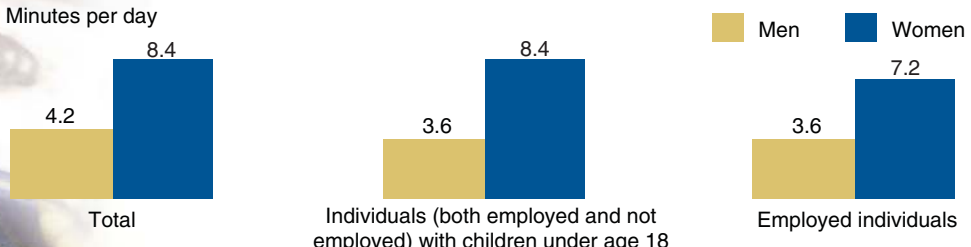
The American Time Use Survey (ATUS) collects information on how Americans spend a critical resource—their time. According to the 2003 data, employed men worked about an hour more than employed women on an average day, and about one-third of employed individuals worked on a given weekend day. About 20 percent of men reported doing housework at home on an average day compared with 55 percent of women. Half of all leisure time for both men and women was spent watching TV.

The Survey reports on time spent on work, household chores, child care, recreation, and numerous other activities. Estimates from the Survey show the range of detailed activities performed daily, how much time is spent in each activity, and how time is allocated by demographic group, labor force status, and weekdays versus weekends. Starting in 2005-06, the Survey will include an ERS-developed module consisting of questions designed to examine time use; purchasing, preparing, and consuming food; and obesity.

Sponsored by the Bureau of Labor Statistics (BLS) and conducted by the U.S. Census Bureau, the ATUS is a continuous, monthly survey that started in January 2003. Time diaries were collected from about 21,000 individuals in 2003 and about 14,000 in 2004 (due to a sample reduction). One individual from each sampled household is interviewed about his or her time use for the 24-hour period on the day before the interview (the "diary" day). Survey respondents are asked to identify their primary activity if they were engaged in more than one activity at a time. Results from 2003 and 2004 are available.

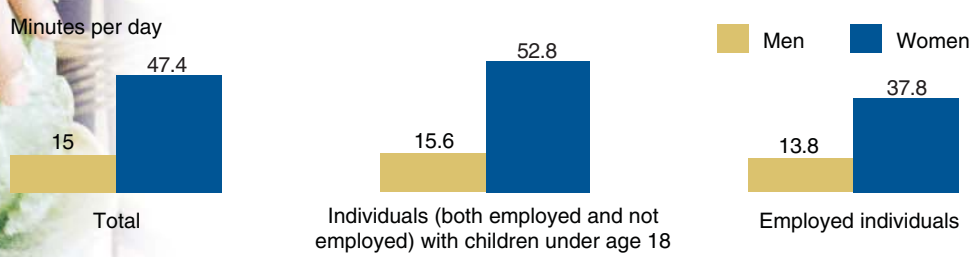
The basic Survey also provides estimates of time spent in several food-related activities, such as grocery shopping; buying other food,

On an average day, women spend more time grocery shopping than men



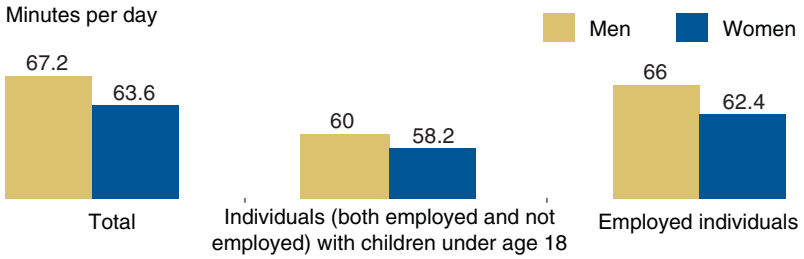
Source: Bureau of Labor Statistics 2003 data and estimates for individuals age 15 or older.

Women also spend more time on food preparation and cleanup than men



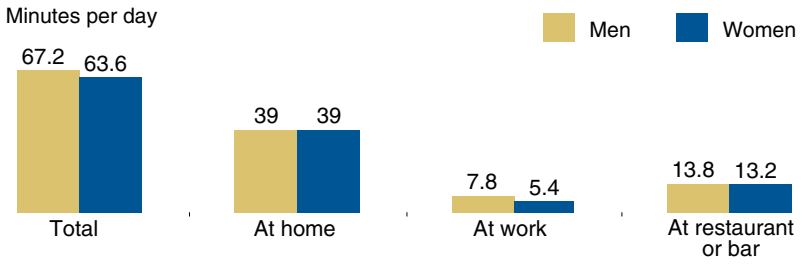
Source: Bureau of Labor Statistics 2003 data and estimates for individuals age 15 or older.

However, men spend more time eating and drinking than women



Source: Bureau of Labor Statistics 2003 data and estimates for individuals age 15 or older.

Most time spent in food consumption is at home



Source: Bureau of Labor Statistics 2003 data and estimates for individuals age 15 or older.

such as prepared food; food preparation and cleanup; and eating and drinking as a main activity. All women—both employed and not employed—spent more time, on average, than did men on grocery shopping and meal preparation and cleanup. Women spent an average of 8 minutes a day grocery shopping, and men, 4 minutes, averaging across the entire population, including those who did not grocery shop. About 18 percent of women grocery shop on a given day for an average of 45 minutes compared with 11 percent of men who averaged 39 minutes. Employed women spent slightly less time on these activities than other women. Most of the respondents reported some eating and drinking as a main activity, with an average of 65 minutes spent in this activity. However, 9 percent reported no eating or drinking at all. Because the Survey also collects information on a respondent's whereabouts during most activities, the 2003 data reveal that an average of 39 minutes was spent eating and drinking at home versus an average of 13 minutes in restaurants.

The ATUS Food & Eating Module contains questions on eating while engaged in other activities, such as driving or watching TV; height and weight; participation in the Food Stamp Program and school meal programs for children; grocery shopping and meal preparation; and household income. Funded by ERS and the National Institutes of Health, National Cancer Institute, the Module was added to the core ATUS in October 2005 and will continue through December 2006, with data available in 2007.

Information obtained from the Food & Eating Module will supplement time use diaries from the core ATUS interview. The information also will allow researchers to study the relationships between obesity, eating patterns, and time use; time use patterns by food stamp recipiency status; and the relationship between the time use patterns of parents and their children's participation in school meal programs. Findings on these topics can help inform policies on and implementation of food assistance and nutrition programs.

This article is drawn from . . .

Food, Nutrition, and Time Use Patterns, available at: www.ers.usda.gov/emphases/healthy/atus/

Food & Eating Module Questions

[Note: actual Module questions in *italics*.]

Eating as a secondary activity—Because many Americans eat while engaged in other activities, such as driving or watching television, information is needed on eating as both a primary and secondary activity. This question will record when and during what activities the respondent was eating or drinking beverages:

We're interested in finding out more about how people fit meals and snacks into their schedules. Yesterday, you reported eating or drinking between [fill in times from respondent's time diary]. Were there any other times you were eating yesterday—for example while you were doing something else? About how long would you say you were eating while you were [fill in activity]? Not including plain water, were there any other times yesterday when you were drinking any beverages? About how long would you say you were drinking while you were [fill in activity]?

Height, weight, and general health—From this self-reported information, Body Mass Index (BMI) can be calculated, and time use patterns, such as activity levels and eating patterns, can be analyzed by BMI levels.

Food stamp benefit participation—*In the past 30 days, did you or anyone in your household get food stamp benefits?* This information will allow analysis of the time use patterns of food stamp recipients versus others, and in particular, low-income persons who are not participating in the program.

School breakfast and school lunch participation—*Please think back over the past week starting last Monday up to today, Monday. In the past week, did [Fill in names of children in the household under age 18] eat a BREAKFAST that was prepared and served at a school, a paid day care or Head Start Center, or a summer day program? This question refers to ONLY BREAKFASTS prepared at the school or center—not meals brought from home.*

What about LUNCH? In the past week, did [Fill in names of children in the household under age 18] eat a LUNCH that was prepared and served at a school, a paid day care or Head Start Center, or a summer day program? This question refers to ONLY LUNCHES prepared at the school or center—not meals brought from home.

Grocery shopping and meal preparation—*Are you the person who usually does the grocery shopping in your household? Are you the person who usually prepares the meals in your household?*

Household income—This question asks if total household income before taxes was above or below a certain amount. The ATUS Computer Assisted Telephone Interviewing software automatically calculates whether the income level is more or less than 185 and 130 percent of the poverty threshold based on the respondent's household composition. These income thresholds—185 percent and 130 percent—determine income eligibility for food assistance programs.


SAFEWAY
FOOD & DRUG
STARBUCKS
COFFEE
WAL★MART
SUPERCENTER
GIANT
DISCOUNT

Photo courtesy of Wal-Mart Stores, Inc.

Where You Shop Matters

Store Formats Drive Variation in Retail Food Prices

Ephraim S. Leibtag
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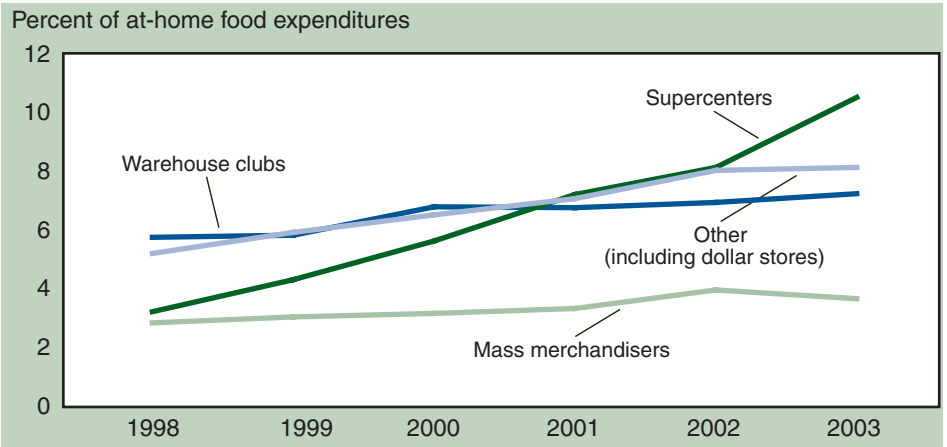
Americans' food shopping habits are changing. Just 20 years ago, traditional grocery stores claimed nearly 90 percent of Americans' at-home food purchases. Today, their share has dropped to 69 percent. Led by retail giants Wal-Mart, Costco, and Target, nontraditional food stores have managed to grab market share by enticing consumers with a formula of one-stop shopping and lower prices. Supercenters, warehouse club stores, and other nontraditional foodstores (see box, "What's in a Name?") increased their share of consumer food expenditures from 18 percent in 1998 to 31 percent in 2003. Among the nontraditional retailers, supercenters (primarily Wal-Mart Supercenters) made the largest leap over this 6-year period, increasing in share from just over 3 percent of food-at-home sales to nearly 11 percent.

What does the eroding role of the traditional grocery store mean for consumers and for retail food prices? Over the past 20 years, the Consumer Price Index for food at home has increased by 3 percent per year, implying relatively stable food prices over time. However, this aggregate measure of food price change does not tell the whole story.

The determinants of retail food prices are many and their interaction is often complex. Certainly, the cost of procuring food (from wholesalers, distributors, or other suppliers) is a major factor, but labor and other costs associated with the operations of a store are also important. In addition, the competitive environment in which a retailer operates along with the preferences of consumers in a given market will have an effect on average prices paid, as well as on the ability of retailers to adjust prices as market conditions change.

These differences in store costs, store characteristics, and consumer preferences cause retail prices to vary across regions and markets. Even within a narrowly defined market, food prices can and do vary substantially: average prices for an identical basket of food items can vary by 5 to 15 percent between stores. Measuring variation in food prices helps improve our understanding of inter-regional variation in food purchasing power and the economic well-being of households, especially low-income households whose food purchases constitute a large share of their household budgets.

Supercenters lead growth of nontraditional food retailers



Source: Calculated by USDA, Economic Research Service using ACNielsen Homescan data.

Prices Vary by Region . . .

ERS investigated variation in food prices by calculating national prices for a variety of dairy products, using a unique data set that facilitated an analysis of average prices paid across all retail outlets (see box, "Homescan Provides Insight Into Food Purchases"). Prices paid for food during 1998-2003 were found to vary geographically. Comparing food prices across four regions of the U.S., ERS found variations of as much as 11 percent. Within the milk category, for example, prices for both skim milk and low-fat milk were highest in the South, while whole-milk prices were highest in the West. Skim-milk prices showed the greatest variation in prices paid, with a 14- to 16-percent difference between the highest and lowest priced regions. For example, in 2003, consumers paid an average price of $2.55 per gallon for skim milk in the South, but only $2.14 per gallon in the Midwest. Low-fat milk prices varied 8-13 percent, while whole-milk prices varied by 7-11 percent. By comparison, these differences dwarf annual milk price inflation rates during this time period. The East averaged the highest price increase at 3.1 percent per year between 1998 and 2003, while the Midwest and West averaged annual price increases of 2.6 and 2.5 percent, respectively. The South had the most stable prices, with average increases of 2.1 percent per year.

Among major U.S. markets, general regional patterns persist for skim-milk prices, with cities in the Midwest (Chicago) and West (Los Angeles and San Francisco) having the lowest average prices paid, and cities in the East (New York and Philadelphia) and South (San Antonio and Atlanta) having the highest average prices. Consumers in nonmetro areas pay lower average prices for skim milk than consumers in major urban areas. Low-fat and whole-milk prices are also low in Chicago but are high in Los Angeles and San Francisco.

In general, variation in retail food prices across markets is a function of differences in costs of producing and transporting foods, consumer preferences, the level of competition in a given market, and USDA programs that regulate production and/or prices of certain commodity groups at earlier stages of production. In the case of milk, while Federal milk marketing orders set minimum prices for raw milk, actual prices reflecting market forces are generally, and sometimes substantially, higher than the minimum prices. In addition, a 2004 USDA Report to Congress concluded that the influence of State-level intervention on raw milk prices is minimal due to the regional and national scope of milk marketing. Variation in raw milk prices within a region would be faced by all processors. This implies that even if there are differences in the minimum allowable milk price at earlier stages of production, the effect of milk marketing regulations will be minimal at the retail level.

Other factors more closely related to the retail-level transaction must play a larger role in accounting for variations in retail milk prices. Regional variation in prices for skim milk, as opposed to whole and low-fat milk, are attributed to differences in demand for these products and differences in retailer pricing strategies. The significant differences in milk prices across U.S. markets, as well as between metro and nonmetro locations, implies that there are differences in the purchase behavior of consumers in different markets that may impact the average price paid for milk.

. . . But Less so by Shoppers' Income Levels

Consumers can affect the price they pay for foods through their purchase behavior: this can include using coupons, checking the newspaper for sale items and

What's in a Name?

Both traditional and nontraditional retail formats contain a variety of store types:

Traditional food retailers

- ***Conventional supermarket***—A format offering a full line of groceries, meat, and produce with at least $2 million in annual sales. These stores typically carry approximately 15,000 items and frequently offer a service deli and a bakery.
- ***Superstore***—A larger version of the conventional supermarket with at least 40,000 square feet in total selling area and 25,000 items. Superstores offer an expanded selection of nonfood items, including health and beauty products and general merchandise.
- ***Combination food/drug store***—A combination of a superstore and drug store, but with 85 percent of sales still from food products.
- ***Warehouse store***—A low-margin grocery store offering reduced variety, lower service levels, and a streamlined merchandising presentation, along with lower average prices.
- ***Super warehouse***—A high-volume, hybrid format of a superstore and a warehouse store. Super warehouse stores typically offer a full range of service departments, quality perishables, and reduced prices.
- ***Limited-assortment foodstore***—A low-priced grocery store that provides very limited services and carries fewer than 2,000 items with limited perishable products.
- ***Specialty/Gourmet retailers***—Stores that specialize in a specific food category, such as organic, locally grown or produced, ethnic/international, or health focused.

Nontraditional food retailers

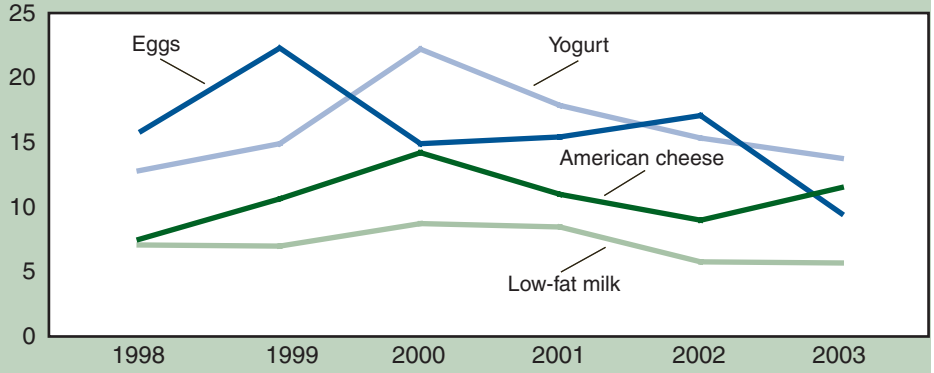
- ***Supercenters***—A large food-drug combination store and mass merchandiser under a single roof. Supercenters offer a wide variety of food, as well as nonfood merchandise, average more than 170,000 square feet, and typically devote as much as 40 percent of their space to grocery items.
- ***Wholesale club***—A membership retail/wholesale hybrid with a limited variety of products presented in a warehouse-type environment. These 120,000-square-foot stores usually have 30 to 40 percent grocery sales and sell mostly large sizes and bulk sales.
- ***Mass merchandiser***—A store that primarily sells household items, electronic goods, and apparel, but also offers packaged food products.
- ***Dollar store***—A limited assortment store that sells a variety of general merchandise and, increasingly, food products. These stores offer a wide assortment of basic household goods at very low prices.

Dairy department prices 5 to 25 percent lower at nontraditional retailers

Product/Store type	1998	1999	2000	2001	2002	2003
			Dollars			
Skim milk (per gallon)						
Traditional	2.27	2.41	2.39	2.42	2.30	2.32
Nontraditional	1.99	2.29	2.27	2.20	2.17	2.07
Low-fat milk (per gallon)						
Traditional	2.34	2.51	2.45	2.54	2.38	2.41
Nontraditional	2.18	2.34	2.24	2.33	2.25	2.28
Whole milk (per gallon)						
Traditional	2.55	2.67	2.60	2.73	2.57	2.63
Nontraditional	2.45	2.58	2.59	2.71	2.52	2.53
Large eggs (per dozen)						
Traditional	1.01	0.93	0.94	0.97	0.99	1.18
Nontraditional	0.85	0.72	0.80	0.82	0.82	1.07
Butter (per pound)						
Traditional	2.63	2.37	2.16	2.79	2.28	2.14
Nontraditional	2.63	2.61	2.39	2.41	2.32	2.09
American cheese (per pound)						
Traditional	2.75	2.89	2.86	2.88	2.80	2.74
Nontraditional	2.55	2.59	2.45	2.57	2.55	2.43
Yogurt (per 6 ounces)						
Traditional	0.47	0.47	0.49	0.50	0.52	0.51
Nontraditional	0.41	0.40	0.38	0.41	0.44	0.44

Price difference between nontraditional and traditional retailers

(Percent below retailers' prices)



Source: Calculated by USDA, Economic Research Service using ACNeilsen Homescan data.


PhotoDisc

buying accordingly, or traveling to a store offering lower prices. Because this behavior is often linked to income, ERS examined how average prices paid for food vary by household income level to determine if income and prices paid are related.

Differences in average milk prices paid by households of different income levels ranged from 1 to 3 percent. Low-income households paid 2 to 3 cents more per gallon for skim milk than households in the other income groups; however, the order and magnitude of the price differences varied from year to year. For whole milk, low-income households paid, on average, 3 cents more per gallon than middle-income households and 5 cents more than high-income households. Lower income households do not always pay higher prices; they paid 2 to 7 cents less per gallon for low-fat milk than did high-income households.

Store Formats Matter

Given the relatively small differences in milk prices paid across income groups, but the larger differences in average milk prices among regions and markets, a store's format, including physical characteristics, product offerings, business practices, and marketing strategies, is a likely determinant of and a key to understanding retail food price variation. Earlier research by ERS and the University of Minnesota examined the relationship between variations in store characteristics, operating costs, and the income levels of consumers shopping at a given store. Store characteristics included physical characteristics, such as square feet of selling area and date of last remodeling, services offered, and operating practices.

Study results showed that stores serving low-income shoppers are generally smaller and older than stores serving moderate-income consumers and offer fewer time-saving services for shoppers. In urban locations, stores serving the poor

Ken Hammond, USDA

lag behind other stores in the use of sophisticated inventory controls and in worker training and compensation practices. They also have fewer checkout lanes and parking spaces, and shorter operating hours than other metro area stores.

Despite these differences, overall operating costs for stores that serve a greater proportion of low-income consumers were not significantly different from those of stores serving more middle- and high-income consumers. However, differences do exist in terms of the sources of costs. For example, stores serving the poor incur greater costs for procuring the foods they sell, but have significantly lower payroll costs and fewer expenses on additional services. These differences in the sources of costs can impact the prices consumers pay for food.

Using the Homescan data, ERS extended this earlier work by examining prices paid at traditional versus nontraditional food retailers. Even when controlling for similar-sized packages, dairy prices are 5 to 25 percent lower at nontraditional retailers than at traditional supermarkets. For example, skim and low-fat milk prices are consistently 5-12 percent lower at nontraditional stores. Similar patterns of lower prices at nontraditional store formats exist across a wide variety of food products including eggs, fruits, vegetables, beef, poultry, coffee, and cookies.

These price differences are significant, especially when compared with standard measures of food price variation. Over the past 20 years, annual food price changes have averaged 3 percent per year, while differences in food prices paid across income groups ranged from 1 to 3 percent. Differences of more than 5 percent in food prices are driven by differences in store formats, which largely account for the regional and market variation in prices observed across the U.S.

Homescan Provides Insight Into Food Purchases

The ACNielsen Fresh Foods Homescan data set uses a consumer panel consisting of 15,000 randomly selected households across the U.S. and includes purchase as well as demographic information for all households in the sample. ERS used the Fresh Foods Homescan Panel to obtain purchase information for random-weight, non-UPC coded food purchases, such as loose fruit and vegetables, store-packaged cheeses, and random-weight meats, in addition to the standard fixed-weight, UPC-coded products. The panel is geographically dispersed and is demographically balanced in terms of household income, family composition, education, and other characteristics. Each household is equipped with an electronic home-scanning unit, and household members record every UPC-coded food purchase by scanning in the product's UPC code or the relevant product look-up code for non-UPC coded food purchases.

One of the unique features of the Fresh Foods Homescan data is that panelists record food purchases across all retail outlets that sell food for home consumption, including grocery, drug, mass merchandiser, club, supercenter, and convenience stores. Panel members record their purchases, capturing not only what is purchased, but where the purchase was made, and whether the purchase was a promotional, sale, or coupon item.

Photo courtesy of Wegman's Food Markets, Inc.

Lower Prices Not the Only Issue

Changes in food retailing affect food prices, as well as the variety of products and services available to consumers. With average food prices 5-25 percent lower at nontraditional retailers, the growing presence of these stores will benefit the average U.S. consumer. It remains to be seen, however, if the overall economy will benefit from these new retail formats, particularly when taking into account the impact on traditional retailers, food retail workers, food manufacturers, and agricultural producers.

Initially, as the share of consumer food spending dollar shifts to nontraditional outlets, traditional retailers are forced to lower costs by reducing the services they provide to consumers, by decreasing the benefits provided to their workers, or by combining the two strategies. They may also opt to expand the variety of products and services available in their stores to include additional prepared foods, carryout meals, organic and health products, and nonfood related services (banking, dry cleaning, etc.) to provide the perception of a unique shopping experience for the consumer.

Traditional food retailers that have lowered prices and/or increased the quality and variety of the services they provide have remained competitive, while those that have not adapted have struggled. Retailers that do not adjust quickly lose market share and are in jeopardy of being forced out of markets where they once were dominant, and in some cases, out of food retailing entirely. For food wholesalers, distributors, and others involved in the food supply chain, expanding and maintaining relationships with nontraditional retailers will be crucial to ensuring that their products are available to the U.S. consumer in the future.

This article is drawn from . . .

Supermarket Characteristics and Operating Costs in Low-Income Areas, by Robert P. King, Ephraim S. Leibtag, and Ajay S. Behl, AER-839, USDA, Economic Research Service, December 2004, available at: www.ers.usda.gov/publications/aer839/

CPI Bias from Supercenters: Does the BLS Know that Wal-Mart Exists? by Jerry Hausman and Ephraim S. Leibtag, NBER Working Paper No. 10712, National Bureau of Economic Research, Inc., August 2004, available at: www.nber.org/papers/w10712

ERS Briefing Room on Food CPI, Prices, and Expenditures at: www.ers.usda.gov/briefing/cpifoodandexpenditures

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Education as a Rural Development Strategy

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Educational attainment in rural America reached a historic high in 2000, with nearly one in six rural adults holding a 4-year college degree, and more than three in four completing high school. As the demand for workers with higher educational qualifications rises, many rural policymakers have come to view local educational levels as a critical determinant of job and income growth in their communities. Attracting employers who provide higher skill jobs and encouraging educational gains are seen as complementary components of a high-skill, high-wage development strategy.

Dave Reede, AgStockUSA

But policymakers are faced with two key questions. First, does a better educated population lead to greater economic growth? According to a recent study, rural counties with high educational levels saw more rapid earnings and income growth over the past two decades than counties with lower educational levels. However, economic returns to education for rural areas continue to lag those for urban areas.

Second, are there ways to improve local educational attainment, particularly through improvements in elementary and high schools, that can enhance the economic well-being of rural residents and communities? In fact, preliminary research demonstrates a connection between better schools and positive outcomes in terms of earnings and income growth for rural workers and rural communities.

Ultimately, the strength of the tie between education and economic outcomes is influenced in part by the extent to which small rural counties lose young adults through outmigration. The loss of potential workers from rural areas, as young adults leave for college and work opportunities in urban areas, has concerned rural observers for many decades.

Does a better educated population lead to greater economic growth?

This rural "brain drain" not only deprives rural employers of an educated workforce, but also depletes local resources because communities that have invested in these workers' education reap little return on that investment.

Rural Adults Post Major But Uneven Educational Gains

The rise in educational attainment since the end of World War II has been a remarkable success story in rural America. In 1970, 7 percent of rural adults had graduated from college, while 56 percent of the rural adult population did not have a high school diploma. By 2000, 16 percent of rural adults age 25 and older had completed college and more than 75 percent had finished high school.

Though rapid, these gains understate the educational attainment of the younger working population, ages 25-44. Nearly one-fourth of rural younger adults have at least a 4-year college degree, and over 80 percent have completed high school. Gains in educational attainment in rural areas were particularly pronounced during the 1960s, dividing the generation that viewed college as an option for the relatively few from the generation for whom college attendance became "ordinary."

A similar divide can be seen in the steady increase in job skill requirements of rural firms, as employment shifted over time from farm to factory to services. Between 1980 and 2000, for instance, the share of rural workers in low-skill jobs fell from 47 to 42 percent.

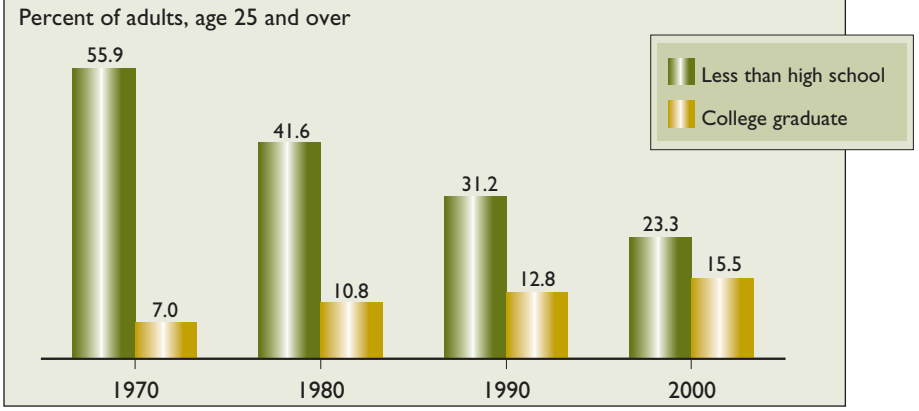
The relationship between high educational levels and high-skill jobs has prompted many communities to pay closer attention to the role of workforce education and training in their economic development plans. But the benefit of raising educational levels will vary widely from place to place because of the sharp disparity in educational attainment across rural America. In nonmetro counties where at least one-fourth of the population age 25 and older lacks a high school diploma, job growth has been steady, yet income levels typically fall well below the national average. In other nonmetro counties where the great majority of adults have completed high school, the need to improve workforce education levels is likely to be less urgent.

Workforce Education Affects Economic Growth

Higher educational levels contribute to local economic development in several ways. First, a well-educated workforce facilitates the adoption of new ways of producing goods or providing services among local businesses. Second, prospective employers may view a well-educated local labor force as an asset when choosing among alternative locations for new establishments. Both factors could help

Corbis

More rural adults have finished high school and college



Source: Prepared by USDA, Economic Research Service using data from the U.S. Census Bureau.

improve a community's chances of attracting new businesses, particularly those businesses that require highly skilled employees. Finally, higher educational levels are almost always tied to geographic clusters of certain key industries, which in some cases have generated major economic growth in rural areas.

According to research presented at a 2003 conference on rural education cosponsored by ERS, the higher the level of educational attainment, the faster the growth rates in both per capita income and employment (see box, "The Role of Education in Rural America"). Researchers at Clemson University found that counties in the rural South with a 5-percentage-point higher share of adults attending college in 1980 reported, on average, 3.5 percent faster growth per year in per capita income over the next 20 years and 5.5 percent faster growth in employment. For a typical county in 2000, this translates into $325 more in per capita income and 150 additional workers. Given an average population of 24,700 in the study counties, the average increase in total annual county income would be approximately $8 million, or about 4 percent above actual 2000 income levels. In urban areas, annual income growth after 1980 rose 9 percent for each 5-point gain in college-educated adults, and annual employment grew 7 percent.

Another study conducted by researchers at Penn State University found that rural counties with a 1-percentage-point higher share of adults with a high school diploma reported $128 more per capita income, even after adjusting for other characteristics that affect income, such as infrastructure, industry structure, and degree of urbanization. But the same 1-percentage-point increase in urban counties raised per capita income by $413.

These studies qualify the role of education in rural economic prosperity in two ways. First, urban areas benefit disproportionately from a well-educated workforce. Second, benefits from higher educational levels depend on other local factors, but primarily for urban areas. Within rural areas, population density, access to interstate highways, social capital, and school characteristics have little power to enhance or inhibit the influence of educational levels on income and employment. As a result, there is little evidence that economic development strategies based on raising workforce education levels will be equally successful regardless of a community's other characteristics. Areas with high educational levels also have high-skill employment bases that have adapted to the particular features of the area. Thus, infrastructure and urbanization enhance the effect of education primarily by influencing the kinds of jobs found in the local economy.

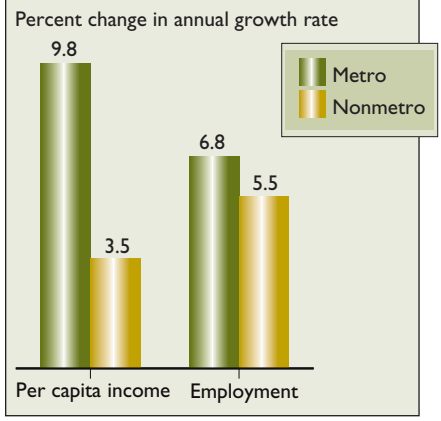
Better Schools Promote Higher Achievement and Earnings

If higher levels of education boost local economic performance, how might localities pursue a development strategy that incorporates improvements in education? In the past, rural areas seeking to stem the brain drain emphasized strategies to retain well-educated youth and adults and attract new residents by encouraging higher skill employment growth. "Workforce development" most

The Role of Education in Rural America

In April 2003, ERS cosponsored a 2-day conference with the Southern Rural Development Center (SRDC) and the Rural School and Community Trust that brought together researchers, policymakers, and educators from around the country to examine the issues surrounding rural education and local economic development. Findings from conference presentations were published in December 2004 as a major SRDC policy report, *The Role of Education: Promoting the Social and Economic Vitality of Rural America*, and in 2005 as special issues of two peer-reviewed journals, the *Review of Regional Studies* and the *Journal of Research in Rural Education.* The research of Stephan Goetz and Anil Rupasingha, Penn State University, and David Barkley, Mark Henry, and Haizhen Li, Clemson University, have been key resources for this *Amber Waves* article.

Income and employment gains due to higher educational levels in the rural South



Annual percentage change resulting from a 5-percentage-point increase in the share of persons age 25 or older with at least some college education.

Source: David Barkley, Mark Henry, and Haizhen Li, "Does Human Capital Affect Rural Growth? Evidence from the South," in *The Role of Education: Promoting the Economic and Social Vitality of Rural America*, Lionel J. Beaulieu and Robert Gibbs, eds., January 2005.

often meant investing in job training programs, both by States and local jurisdictions. More recently, attention has turned to improving the quality of local schools in order to raise the level of performance and well-being of the local workforce. Rural areas may also view good schools as an amenity for prospective employers and workers who must move families to the area.

Improvement of rural schools, however, faces special challenges, especially in balancing resources and outcomes. As is often the case with service provision in rural areas, costs per pupil may exceed the national average because rural schools often cannot take advantage of economies of scale provided by a large population base. Moreover, rural counties often lose a large portion of their youth to places with better job and educational opportunities. Thus, the future income and tax revenues that rural students could generate—the "social returns" on school investments—may be lost to other, often urban, places, and investments designed to improve schools may not pay off for the local community in the long run.

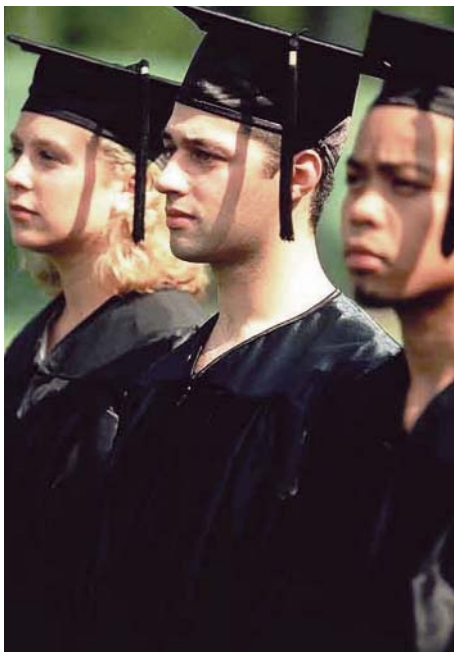
The financial challenges and geographic isolation facing rural schools often contribute to educational disadvantages. Standardized test data show that rural students tend to score below suburban students in math and reading, but on par with central city students. Rural teachers earn less, on average, than urban teachers and are less likely to hold an advanced degree or be certified in the subject they teach. Rural schools are less likely to offer advanced classes in science and math. But rural schools are also smaller and have teacher-pupil ratios similar to urban schools.

Students in rural schools that offer advanced coursework and have more qualified and better paid teachers score higher on standardized math and reading tests. Once scores are adjusted for characteristics related to school quality, the rural disadvantage disappears. These factors are often closely related to the socioeconomic profile of the students' families. ERS found that characteristics of rural families—race, sex of family head, English as a native language, and family structure—actually gave rural students a slight advantage over both suburban and central city students. While family and personal characteristics contribute to the special challenges of rural school systems, especially those in persistently poor and low-education areas, they do not explain the rural disadvantage as a whole.

The effect of school characteristics on student achievement shows that schools have at least *indirect* influence over workforce quality. Rural schools can also influence the economy *directly* by their effect on workers' earnings. By age 26, workers who graduated from rural high schools earned about 3 percent less than workers who graduated from suburban high schools, after adjusting for educational attainment, type of job, and current residence. When earnings are further adjusted for rural school disadvantages, the rural-suburban gap disappears. Rural students who graduate from better schools will thus perform better in the labor market whether or not they remain in rural areas. Because students who do better in school are more likely to attend college and leave their home communities, there is a trade-off between improvements in local workforce quality and the loss of young adults due to outmigration.

Outmigration May Diminish School Effects

Recent research shows that improvements in rural schools boost local economic development prospects. Higher adult educational levels lead to faster income and employment growth, and better schools can produce higher academic achievements and improve longrun economic prospects for students. According to a study of rural South Carolina in the 1990s by researchers at Clemson University, a small but significant link occurs between school quality (measured by student-teacher ratios) and employment growth in the local community.



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Continued movement of young adults from rural to urban areas for college or higher paying jobs means that much of the potential benefit to earnings from improving schools will be lost to the local community. This effect weakens the rationale for supporting good schools, especially if these improvements are perceived to encourage outmigration. Fifty-five percent of rural young adults who attended college no longer resided in their home county. Young adults who had not completed high school were about half as likely to reside in a different county, with high school graduates falling in the middle. Despite rural gains, the rural-urban educational attainment gap remains high, and high-skill jobs in large and medium-size cities continue to attract young adults. Jurisdictions with significant economic or social distress may find it especially difficult to leverage improvements in school quality without concurrent changes in the local economy.

Although rural America continues to lose a disproportionate share of its college-bound youth, the long-term loss is often substantially less than the initial outflow, as many outmigrants return to raise children, assist aging relatives, or use social networks to find jobs. Communities may find good schools to be a particularly effective way to capture a larger share of these potential returnees. Better schools, for example, can make a difference to parents who want to raise their children in the home environment they once enjoyed, but who also seek the best possible education for their children.

Current Federal policy supports raising academic standards and workforce educational levels regardless of a community's economic and social profile. Such an approach holds great potential for helping individuals. The benefit to rural communities, particularly in distressed areas, could be greatest where human capital improvements are but one of several parallel strategies (such as small business development) aimed at building a local economy with greater job opportunities and higher earnings.

This article is drawn from . . .

"Does Human Capital Affect Rural Growth? Evidence from the South," by David Barkley, Mark Henry, and Haizhen Li, in *The Role of Education: Promoting the Economic and Social Vitality of Rural America*, Lionel J. Beaulieu and Robert Gibbs, eds., January 2005: 10-15, available at: www.srdc.msstate.edu/publications/ruraleducation.pdf

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"How the Returns to Education in Rural Areas Vary across the Nation," by Stephan Goetz and Anil Rupasingha, in *The Role of Education: Promoting the Economic and Social Vitality of Rural America*, Lionel J. Beaulieu and Robert Gibbs, eds., January 2005: 6-9, available at: www.srdc.msstate.edu/publications/ruraleducation.pdf

Low-Skill Employment and the Changing Economy of Rural America, by Robert Gibbs, Lorin Kusmin, and John Cromartie, ERR-10, USDA, Economic Research Service, October 2005, available at: www.ers.usda.gov/publications/err10/

"The Role of Local School Quality in Rural Employment and Population Growth," by David Barkley, Mark Henry, and Shuming Bao, in *Review of Regional Studies*, Vol. 28, No. 1, Summer 1998: 81-102.

The ERS Briefing Room on Rural Labor and Education: www.ers.usda.gov/briefing/laborandeducation/

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Changing Federal Tax Policies Affect Farm Households Differently

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Significant changes in Federal individual income tax and estate and gift tax policies have occurred over the last few years. Since the Federal individual income tax imposes the largest tax burden on the broadest group of farmers and the Federal estate tax can affect the ability to transfer the farm operation to the next generation, these changes are of considerable importance to the farm community. Modifications to these tax policies can affect not only the financial well-being of farm households but also the number and size of farms, their organizational structure, and their use of land, labor, and capital inputs.

Federal tax code changes affecting both individual and business income taxes have reduced average tax rates for all farm households, but the effects of these changes vary by type of farm. Commercial farm households are the primary beneficiaries of many of the business tax provisions, including increased capital expensing and a new deduction for manufacturers, which is defined to include farmers.

Changes to Federal estate tax policies have raised the value of property that can be transferred to the next generation free of the estate tax to $1.5 million in 2005, and tax rates have been reduced. This has reduced the number of estates required to pay tax and the amount of taxes owed. Despite these changes and targeted relief to farmers and owners of small businesses, because of appreciating land values and increasing farm size, a larger share of farm estates are subject to the Federal estate tax. While about 1 percent of all estates currently owe Federal estate tax, between 3.5 and 4 percent of all farm estates and nearly 18 percent of commercial farm estates currently owe estate taxes. While existing law provides for the phase-in of additional reductions in Federal estate taxes, considerable uncertainty clouds the longrun effects of these changes due to the scheduled 1-year repeal of the tax in 2010 and a reversion to 2001 law in 2011.

The frequent revisions of the Federal tax code have added to its complexity, especially since many of the recent changes have been phased-in or are tem-


Rick Miller, AgStockUSA

porary. This effect has increased support for tax simplification efforts or even fundamental reform of the Federal tax system. The President has made tax reform a priority policy initiative and has appointed a commission to make recommendations for reform by November 2005. Fundamental reform could have important consequences for both the tax compliance burden and the financial well-being of farm households.

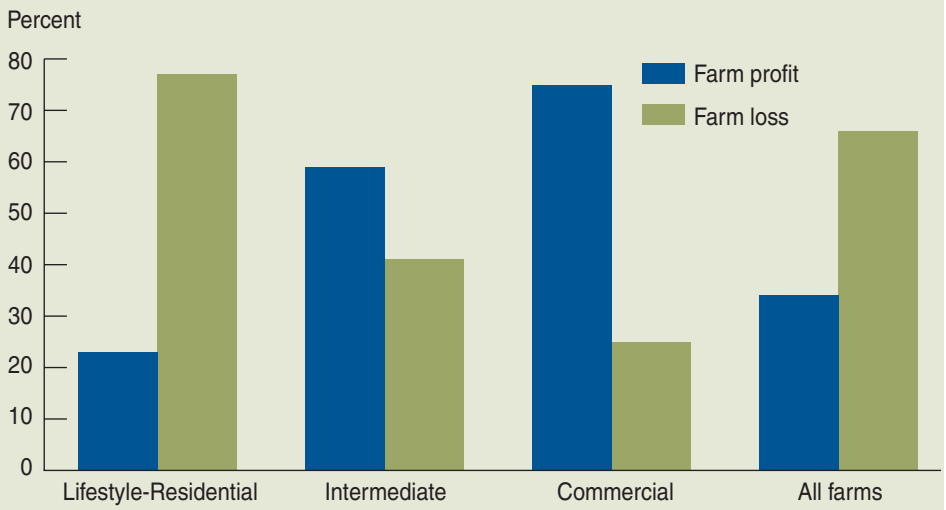
Individual Income and Business Taxes Reduced

Tax relief measures enacted in each of the last 4 years have reduced Federal income taxes for both individual and business taxpayers. For individual taxpayers, this legislation has reduced marginal income tax rates, increased standard deduction allowances, lowered tax rates on capital gains and dividends, increased savings incentives, and raised child and earned income credit amounts. Federal tax policies affecting businesses have also been modified, including reduced tax rates on business investment and manufacturing income.

Since most farms are operated as sole proprietorships, partnerships, or small business corporations, most farm income is taxed as individual income rather than as corporate income. As a result, farmers and many other small businesses are major beneficiaries of recent tax changes since they benefit not only from the lower individual tax rates and other changes aimed at all taxpayers but from faster writeoff of investment in machinery, equipment, and other eligible capital purchases and the newly enacted manufacturers' deduction.

The cumulative effect of these Federal tax policy changes has resulted in the lowest Federal tax burden on farm income and investment in decades. The average tax rate has been reduced from 18 percent in 2000 to about 14 percent for 2005. Like all households, about one out of every three farm households now owe no Federal income tax, with some actually receiving a refundable child or earned income credit. Nearly all farm households have realized some tax savings as a result of the changing Federal tax policy environment.

Share of farm sole proprietorships reporting farm profit and loss varies by farm type, 2000



Source: Internal Revenue Service (IRS) special tabulations, 2000.

Impact Varies by Farm Type

Since the household is the typical unit of taxation, farm and nonfarm income are combined when computing Federal income taxes for farm households. In fact, most Federal income tax paid by farm households can be attributed to nonfarm income. Since 1980, farmers have reported negative aggregate net farm income for tax purposes. In 2000, farm sole proprietorships reported total taxable gross farm business income over $91 billion but reported aggregate net farm operating losses of $9 billion. One-third of all farm sole proprietorships reported profits of $8.3 billion but the other two-thirds reported losses of $17.3 billion. About half of all partnerships and small farm business corporations also reported losses.

Examining these losses by farm type provides some additional insight on the effects of tax code changes. ERS classifies farms as rural residence farms (lifestyle, retirement, and limited resource farms), intermediate farms (sales less than $250,000 and primary occupation is farming), and commercial farms (sales greater than $250,000). Nearly $10 billion of the $17.3 billion in losses reported can be attributed to rural residence farms, with three out of four reporting a loss. Still, these farm households on average reported adjusted gross income of just over $73,000.

The fact that many rural residence and intermediate farms report losses should not suggest that changes to those tax policies affecting farm income and investment are unimportant. In most instances, losses arising as a result of these changes can be used to reduce the taxes on income from other sources. However, since rural residence and many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intermediate farm households derive most of their income from nonfarm sources, these farm households are primarily affected by the changes in individual marginal income tax rates, standard deduction and other exemption amounts, and those policies affecting the tax treatment of income from nonfarm sources.

Commercial farms account for about two-thirds of farm sales and nearly half of farm investment. These farms are the primary beneficiaries of the tax changes affecting farm business income and investment. The most significant changes over the last few years include reduced capital gains tax rates, increased capital expensing, and the new manufacturers' deduction.

The reduced tax rate of 15 percent on capital gains (5 percent for taxpayers in the 15-percent-or-lower income tax brackets) is especially significant for farmers. Capital gains are a key component of income for many farmers since assets used in farming are eligible for capital gains treatment and the amount of capital gains is increased by the ability to deduct certain costs, especially for livestock. According to the Internal Revenue Service (IRS), 40 percent of all farmers report some capital gains, nearly double the share for all taxpayers. The average amount of capital gain reported by farmers is about 50 percent higher than the average capital gain reported by other taxpayers. Over 60 percent of commercial farmers report capital gain income, and these farms account for 25 percent of all capital gains reported by farmers.

Farming requires large investments in farm machinery, equipment, and other capital. The tax treatment of these investments is of considerable importance to the farm sector, especially commercial farmers. Prior to the Economic Growth and Taxpayer Relief Reconciliation Act of 2001, capital purchases were eligible for an immediate expensing of $25,000. Investments above this amount were required to be depreciated over a specified recovery period. The 2001 Act added a temporary 30-percent first-year allowance. The Jobs and Growth Tax Relief Reconciliation Act of 2003 increased the bonus first-year depreciation from 30 to 50 percent of eligible investment and, more importantly, raised the amount of investment that can be expensed from $25,000 to $100,000. The temporary first-year bonus depreciation allowance has expired but the expensing provision was extended through 2007 by the American Jobs Creation Act of 2004. The amount is adjusted for inflation and is equal to $105,000 for 2005. Less than 10 percent of residential and intermediate farms invest more than $25,000, compared with over 40 percent of commercial farms. Most farmers will be able to deduct their entire 2005 capital investments. This increased capital expensing allowance reduces the effective tax rate on farm capital and greatly simplifies the recordkeeping burden associated with the deprecation of capital purchases, with commercial farmers the primary beneficiaries.

One of the most important business changes in the 2004 Act was the replacement of the foreign sales corporation/extraterritorial income provisions, which allowed U.S. exporters to exclude a portion of their foreign sales income, with a new deduction for U.S. manufacturers. This exclusion had been declared a prohibited export subsidy by the World Trade Organization (WTO). It was replaced to avoid retaliatory tariffs, but a recent WTO ruling regarding the phaseout of benefits under the old law raises the possibility that the tariffs could be reimposed. While few farm households directly benefited from the prior exclusion, about one out of five farm households will directly benefit from the new deduction. The deduction is equal to 3 percent of qualifying production income in 2005. It increases to 7 percent in 2007-09 and 9 percent in 2010. The deduction is limited to no more than 50 percent of wages paid to hired labor. While this limitation will reduce the deduction for many smaller farms that hire little or no labor, farm households are expected to be eligible to deduct about $800 million in 2005 and nearly $2 billion in 2010. Commercial farm households are the primary beneficiaries, with about two-thirds expected to benefit with an average deduction estimated at $6,900. While commercial farms account for only about 7 percent of all farms, they will receive about 75 percent of all benefits from the manufacturing deduction.

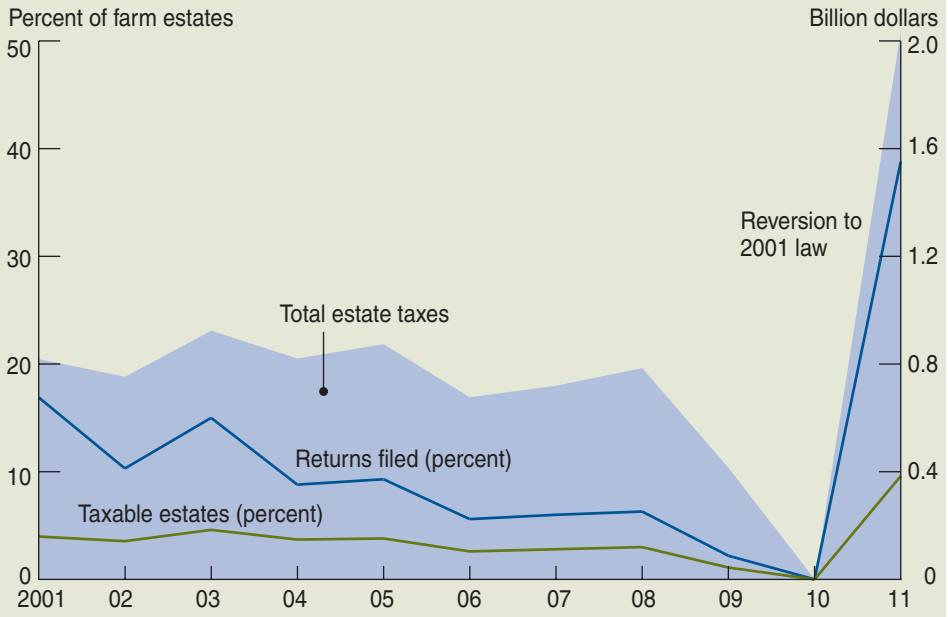
Federal Estate Taxes Lowered...

Since 1916, the Federal estate tax has applied to the transfer of property at death. While the tax has been amended many times, the estate tax and the companion gift tax imposed upon transfers prior to death have historically accounted for only a relatively small share of total Federal revenues. In 2005, these taxes are projected to account for less than 1 percent of total Federal tax revenue. While the aggregate importance of Federal estate and gift taxes is small relative to other Federal Government revenue sources, the potential effect of these taxes on farmers and other small business owners has been a major concern among policymakers. Over the years, this has led to the enactment of a number of targeted provisions, including a special use value provision that allows farm real estate to be valued at its farm use value rather than its fair market value. Farmers and certain other closely held businesses are also permitted to pay their taxes over a 15-year period instead of the normal 9 months following the date of death.

Providing tax relief to farmers and other small business owners was also an impetus for changes to Federal estate and gift tax policies in the Taxpayer Relief Act of 1997 and the Economic Growth and Taxpayer Relief Reconciliation Act of 2001. These changes provided a new deduction for family-owned businesses, reduced tax rates, and increased the amount of property that can be transferred to the next generation free of Federal estate tax to $1.5 million for 2005. As a result of this increase, only about 1 percent of all estates are expected to owe Federal estate tax in 2005. It has been estimated that about twice as many estates of small business owners are subject to the Federal estate tax.

An even larger share of farm estates owes Federal estate tax. The appreciation in land values, the increase in average farm size, and the rising investment in farm machinery and equipment have increased farm estate values and taxes. Based on simulations using farm-level survey data, about 9 percent of the 34,397 projected farm estates for 2005 are estimated to have assets in excess of $1.5 million and would be required to file an estate tax return. After deductions, between 3.5 and 4 percent of all farm estates would be taxable. The total amount of Federal estate taxes in 2005 is estimated at $873 million. The average tax due for those who owe is about $660,000. These taxable farm estates have an average net worth of $3.5 million, with about two-thirds of the net worth attributable to farm business assets, primarily farm real estate.

Share of farm estates owing taxes will drop over the next 5 years



Source: Estimated by USDA, Economic Research Service using data from USDA's Agricultural Resource Management Survey.

...but Larger Share of Commercial Farms Owe Federal Estate Taxes

The potential impact of the Federal estate tax varies by farm type. While only about 3 percent of all rural residence and intermediate farm estates are projected to owe any Federal estate taxes in 2005, a much larger share of commercial farm estates are projected to owe tax. Commercial farms continue to increase in size. From 1996 to 2003, during which tax code changes initiated a gradual increase in the amount of property that can be transferred free of estate tax, the average number of acres operated by commercial farms increased by about 25 percent, from just over 1,500 to nearly 1,900. This increase in size and the continued strong appreciation in land values combined to boost the average value of land and buildings for commercial farms by about two-thirds to nearly $1.3 million in 2003. These trends have continued in 2004 and 2005.

Thus, despite estate tax relief targeted to farmland (special use valuation), increasing farm size and appreciating land values continue to subject a larger share of commercial farm estates to the Federal

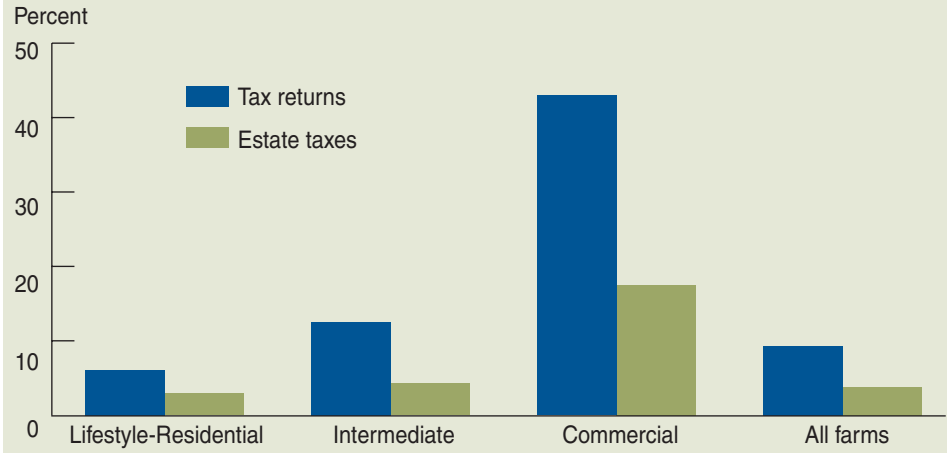
estate tax. For 2005, an estimated 18 percent of all commercial farm estates will owe Federal estate taxes. These farms are six times more likely to owe Federal estate taxes than other farms and nonfarm small businesses. On average, commercial farm estates are expected to owe over $1.1 million in Federal estate taxes. While these farms represent only about 4 percent of all farm estates, they account for about one-third of all Federal estate taxes paid by farm estates.

Existing Law Provides for Future Tax Reductions and Uncertainty

Under the 2001 Act, the amount of property that can be transferred free of estate tax will continue to increase. The exempt amount is scheduled to increase to $2 million in 2006 and to $3.5 million in 2009. At this level, about 1 percent of farm estates will owe Federal estate tax in 2009, with total Federal estate taxes expected to be cut in half, compared with the 2005 level. Commercial farm estates will be the primary beneficiaries of these changes.

The estate tax is scheduled to be repealed completely in 2010. However, since the 2001 changes are scheduled to sunset in 2011, this repeal is only temporary. The resurrected tax in 2011 reverts to the law in place prior to the 2001 changes. As a result, the exempt amount would return to $1 million and the top tax rate would increase to 55 percent. The special deduction for qualified family-owned businesses would also be available again. This reversion is estimated to result in as many as 10 percent of all farm estates and about 25 percent of commercial farm estates owing Federal estate tax. This phase-in of the increased exempt amount and the repeal and reversion to 2001 law raises concerns regarding the equity of such disparate treatment for similar estates depending upon the date of death.

A small share of lifestyle or intermediate farm estates are taxable, 2005



Source: Estimated by USDA, Economic Research Service using data from USDA's Agricultural Resource Management Survey.

It also causes considerable uncertainty for estate planning purposes.

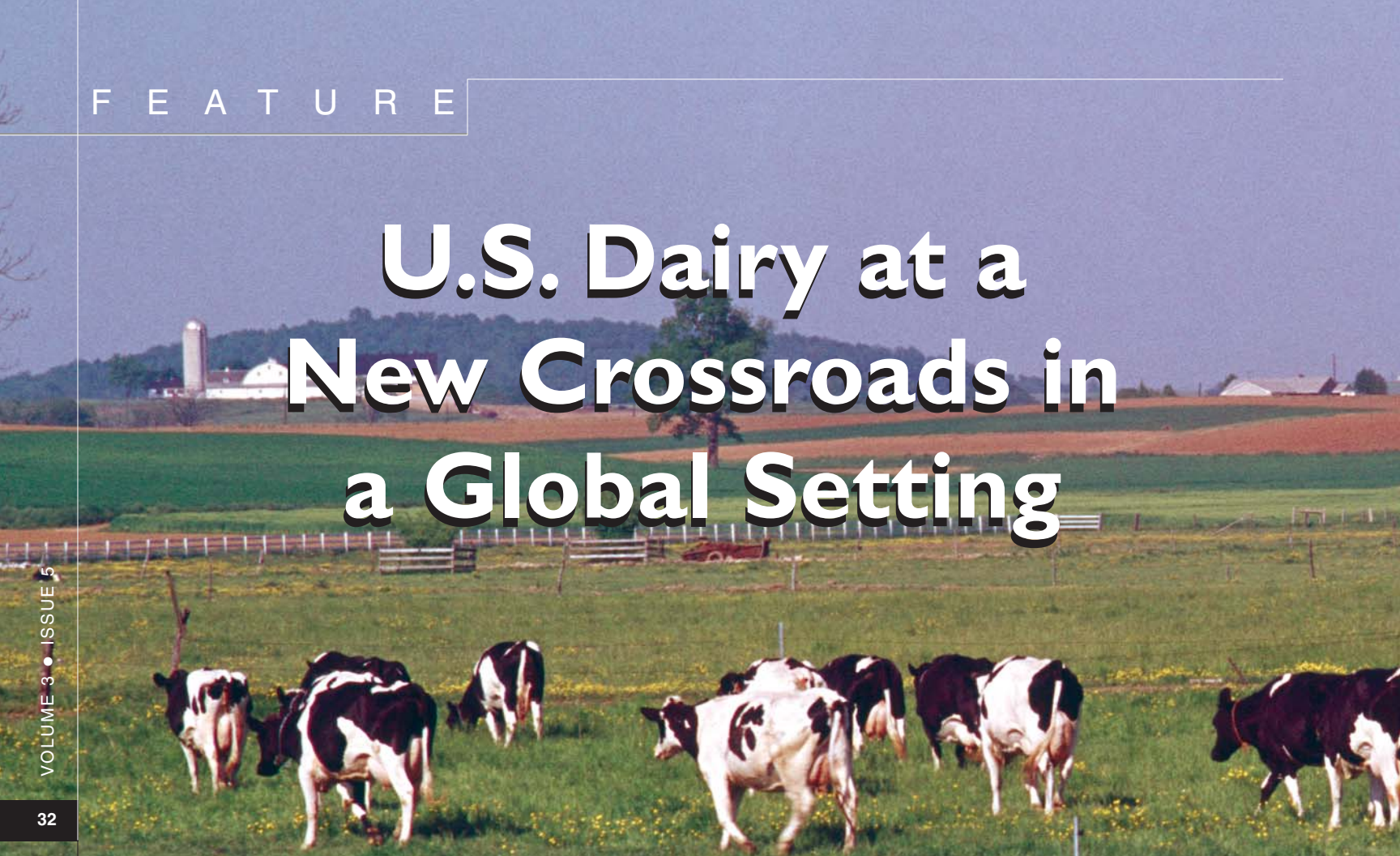
This uncertainty is compounded by changes in the treatment of unrealized capital gains at death that are scheduled to become effective with estate tax repeal. Under current law, the basis (which is the value used to determine gain or loss) of assets acquired from a decedent are stepped up to their fair market value at the date of death. This "step-up in basis rule" essentially eliminates the capital gains tax on increases in the value of property not realized before death. The repeal of the estate tax is coupled with the repeal of the step-up in basis rule. In 2010, the step-up in basis rule is replaced with a carryover of the decedent's basis with an added exemption of $1.3 million (plus an additional $3 million for transfers to a surviving spouse) that can be allocated among the various inherited assets with unrealized appreciation. This change will add to the compliance burden since it would be necessary to determine the cost or other basis of inherited assets. In farming, these assets may have been held for several years with limited documentation with regard to cost or even how they were acquired. Some farm estates that would owe no Federal estate tax or capital gains tax under current law would be faced with this compliance burden and could even owe capital gains taxes upon the sale of the inherited assets. The combination of no estate tax and potential capital gains taxes could increase the amount of farm assets transferred to the next generation and encourage the heirs to continue to hold the transferred assets to avoid capital gains taxes.

While repeal and resurrection of the estate tax is still several years away, there is increasing interest in either permanent repeal or a substantial permanent increase in the exempt amount combined with the retention of the stepped-up basis at death treatment for inherited assets. Addressing the issue now would reduce some of the uncertainty and inequity created by the phase-in and sunset provisions under existing law.

This article is drawn from . . .

The ERS Briefing Room on Federal Taxes, available at:www.ers.usda.gov/briefing/federaltaxes/

U.S. Dairy at a New Crossroads in a Global Setting



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Domestic dairy industries and markets worldwide are often cast as heavily protected with limited exposure to global competition. However, despite high tariffs and price support policies that persist in many of the world's dairy-producing countries, today's milk producers and dairy companies face increasing competitive forces from outside their borders. Globalization of the dairy industry is exerting pressures on both domestic-oriented dairy industries and international market "players" to adapt to changing market relationships.

International dairy trade has often been called a dumping ground for unwanted surplus commodities. However, dairy trade is now increasingly driven by demands from developing-country consumers wanting to upgrade diets and developed-country markets seeking specialty products. Competition worldwide has given rise to increasing dairy consumption, trade, and foreign direct investment in domestic dairy industries, and though many trade barriers remain in place, they do not appear to be stopping globalization of the dairy industry.

Grant Heilman, Grant Heilman Photography

In this environment, domestic dairy sectors must compete aggressively for a share of consumer food budgets and for resources and investment capital. Dairy farmers, processors, and manufacturers who prosper are those who continuously innovate by adopting new technology and adapting to changing consumer demands. These forces have brought about major changes within the U.S. dairy industry, namely, expansion and significant consolidation. The U.S. dairy sector has advantages over its competitors that enable it to withstand such changes—it has efficient production systems open to foreign investment and it serves a large, growing population of affluent consumers. Nevertheless, the pressures of globalization, structural changes in world dairy markets, and the potential for further trade liberalization as a part of the current round of trade negotiations have brought the U.S. dairy sector to a crossroads.

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Dairy Companies Adopt New Strategies

Dairy markets everywhere are being shaped by consumer demands, the ability of dairy farmers to react to change, and dairy company strategies for maximizing profits. Firms operating successfully in global dairy markets are those that respond quickly to changing economic forces, changing policies—nonagricultural as well as agricultural—and shifts in milk supply and demand factors. Those firms may be national firms operating in single countries, regional firms operating in a well-defined area, or multinational (global) firms with a presence in multiple regions or areas. Competition among firms has grown, but so has the number of firms joining forces. As international dairy companies recognize the potential benefits from supplying milk and dairy products in different countries and the prospects for demand growth, they are repositioning themselves to source milk and products from multiple locations. This trend is spawning partnerships and joint ventures among firms seeking to benefit by controlling all stages of the production process. Direct investment across borders has also altered competition in dairy markets. Globalization has tended to emphasize the strength of multinational dairy firms, with the most prominent being Nestlé (Switzerland), Arla Foods (Denmark-Sweden), Danone (France), the Fonterra Co-operative Group (New Zealand), Lactalis (France), Unilever (Netherlands-U.K), and Kraft Foods (U.S.).

Multinational firms can operate in several countries or regions using any number of approaches. They can build new facilities to manufacture locally demanded products, or they can form alliances or partnerships with existing local firms that have cultivated local demand. Purchase of local brands is another option. A strategy that employs all of these approaches enables multinationals to reduce price risks and market volatility. While multinationals are most active in stable, well-established markets, alliances or partnerships with local firms have helped them expand to emerging markets in recent years.

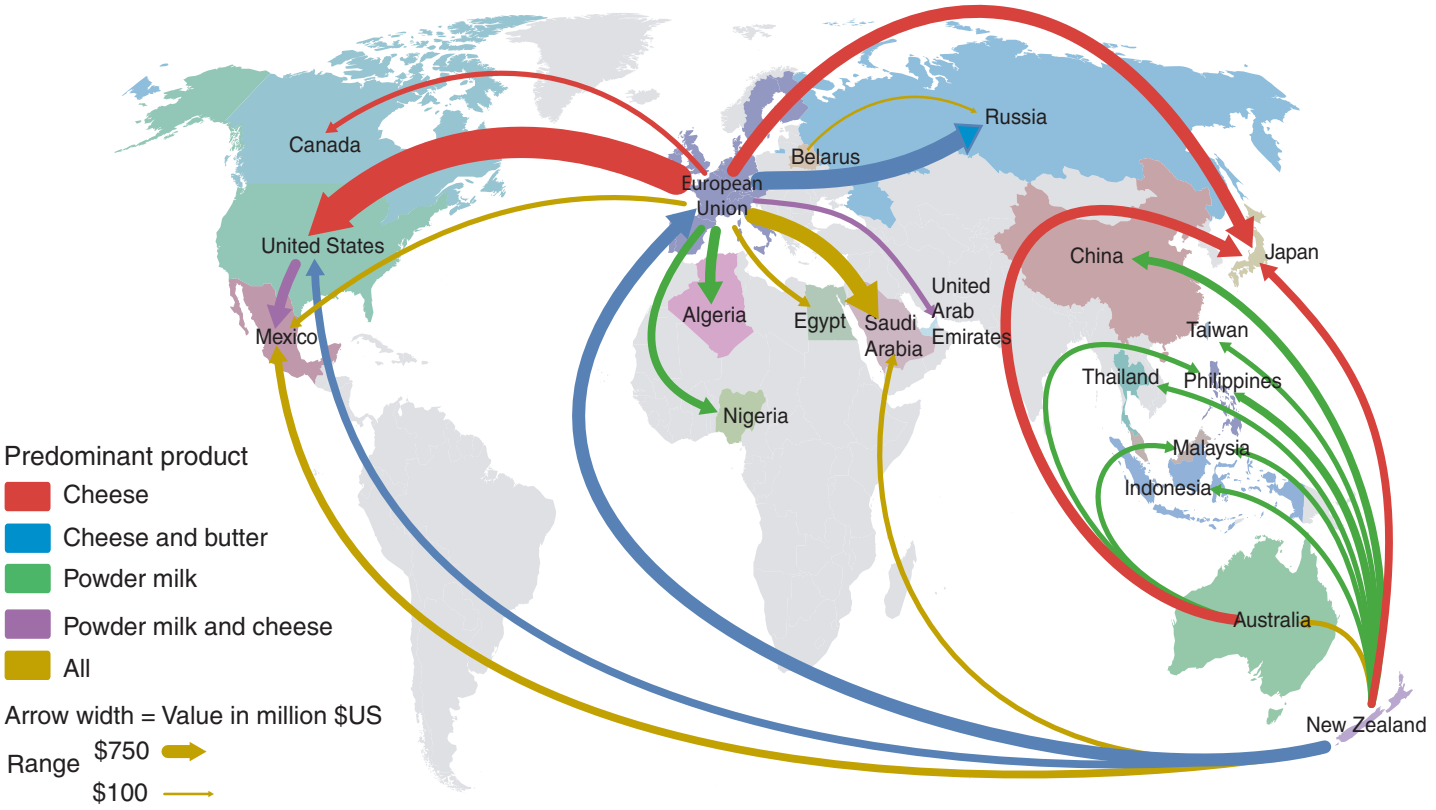
Multinational dairy companies have long viewed the U.S. with its large and affluent market as an opportunity. Since trade opportunities are limited by trade impediments, multinationals have chosen to make direct investments. Led by firms based in the European Union (EU), foreign direct investment in the U.S. now stands at about $5 billion. Nestlé and Unilever have gained a major stake in the U.S. ice cream industry through purchases of U.S. brands. Together, they account for about 30 percent of supermarket ice cream sales in the U.S. Several French companies—Fromageries Bel, Sodiaal, Lactalis, and Bongrain—are involved in U.S. yogurt and cheese markets. Yoplait, a premier brand of Sodiaal, has been licensed to General Mills, while the Président brand of cheese is a Lactalis product manufactured in Wisconsin and California.

New Zealand's Fonterra, the world's top dairy product exporter, has also

New Zealand's Fonterra: Partnering in a Global Dairy Industry

The Fonterra Co-operative Group was formed by the merger of New Zealand Dairy Group, Kiwi Co-operative Dairies, and the New Zealand Dairy Board in late 2001. The group is owned by its 13,000 dairy farming shareholders and is the world's largest exporter of dairy products, exporting 95 percent of New Zealand's production. Fonterra is considered a "partnership model" because of the growing number of foreign companies with which it has established partnerships. This strategy enables it to access dairy markets where dairy demand is met by local supply. Partnerships, such as joint ventures, give Fonterra market access without major capital investments and financial risks, while providing mutual benefits to both companies. In the U.S. market, Fonterra is a buyer and an exporter of U.S. nonfat dry milk to other foreign markets, providing valuable global marketing expertise. Its other partnerships include joint ventures with Nestlé through Dairy Partners Americas in South America, Arla Foods in the United Kingdom, Clover Industries in South Africa, and Britannia Industries in India. Fonterra is the world's largest dairy ingredients company, but is also a supplier of consumer branded products, such as its Anchor brand butter, Anlene brand milk powders, and Mainland brand cheese products. Fonterra has a major stake in the Australian dairy company, Bonlac Foods Limited, and has undertaken the formal merger of both companies' consumer products operations in Australia and New Zealand.

Major Global Trade Flows of Dairy Products in 2003



increased its presence in the U.S. market. Fonterra has formed a number of partnerships throughout the world that enable it to source milk and dairy products from multiple locations (see box, "New Zealand's Fonterra: Partnering in a Global Dairy Industry"). In the U.S., Fonterra has teamed with Dairy Farmers of America, the largest farmer-owned dairy cooperative in the Nation. The resulting partnership, DairiConcepts, produces and markets milk protein concentrates—the first commercial production of its kind in the United States. Fonterra has also entered into an agreement with Dairy America, a federated marketing cooperative, to serve as the marketing agent for the nonfat dry milk received from its members (seven U.S. farmer-owned dairy cooperatives).

The Changing Face of Dairy Products

Dairy products available on the market range from basic raw milk to fairly standardized "commodity" products to an array of higher valued products that have only recently gained wider market presence. Historically, when trade is the issue, both within and between countries, the commodity products—cheese, nonfat dry milk, and butter—have held center stage. These were the products that could best withstand the rigors of transport. However, factors such as the emergence of sophisticated milk components as ingredients, greater emphasis on cheese variety (including brands), recognition of well-defined local, national, and even international product markets, development of manufacturing processes that lengthen shelf-life, and improved transportation systems have changed the way firms assess both domestic and global dairy marketplaces.

The major dairy products traded internationally can be broadly placed in four categories: butter, cheese, dry milk powders, and ingredients. Within these categories are a large number of "differentiated products"—cheese varieties, dry milk powders with a range of fat contents, or milk components, such as the various milk proteins. The ingredient trade has only recently emerged as a key sector, driven primarily by widening uses of milk proteins and lactose (milk sugar) in various food applications.

Trade Flows Reflect Consumer Demand and Dairy Resources

The biggest players in international dairy trade are not necessarily the largest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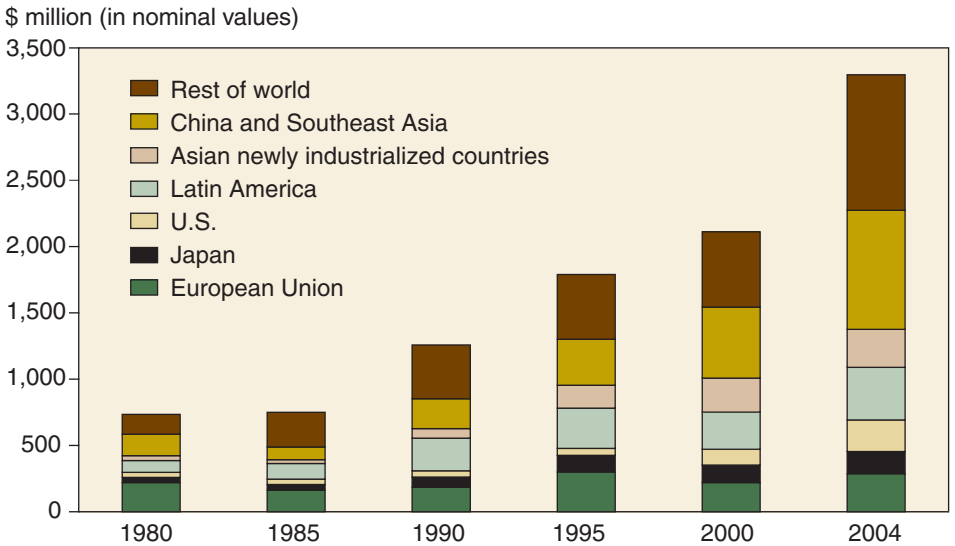
producers. New Zealand, for example, is one of the smallest producing countries but is a major dairy trading country. A country's population relative to its production of milk is a key to determining the likelihood of its having a milk surplus or a milk deficit. Milk-surplus countries that supply foreign markets typically have an efficient manufacturing sector capable of producing storable dairy products with quality attributes at prices that make exporting economically feasible.

Based on the value of trade flows in 2003, New Zealand, Australia, and the EU are leading dairy exporting countries/regions. Low-cost producers in Australia and New Zealand are the principal suppliers of cheese and dry milk products to Asian markets, while subsidized EU producers focus on nearby markets in Africa, the Middle East, and Russia and export significant amounts of cheese to North America.

As diets around the world have changed, so, too, has global demand for milk and dairy products. The mix of products demanded, however, varies by region or country and the stage of a region's economic development. The largest consumers of dairy products are high-income developed countries, such as the U.S., EU, Australia, New Zealand, and Japan. Middle-income developing countries use large quantities of dry milk powders for fluid milk reconstitution programs and as ingredients in other foods. In low-income developing countries, demand is insignificant outside of food aid programs.

In some developing countries with fast-rising urban populations, demand for dairy products is outstripping domestic milk production. Rapid growth in consumption is driving growth in dairy imports in land-scarce Southeast Asia and in China. New Zealand's dairy exports to the EU have remained nearly unchanged for 25 years, but the EU share of New Zealand's dairy exports has dropped from 30 to 8 percent, due largely to increasing exports to developing countries in Asia. Because water and land needed to produce high-quality dairy feed are limited in these countries, rising demand has exerted upward pressure on international dairy prices. As a result, the gap between prices of milk received by farmers in the U.S. and New Zealand's price has diminished in recent years from $147 per metric ton in 2000 to $128 per metric ton in 2004.

Developing countries are driving New Zealand dairy product exports



Source: Statistics New Zealand.

Are Dairy Policies Keeping up With Today's Market?

These changes in global dairy markets are taking place in the context of significant market intervention by some of the world's leading dairy product importers and exporters. Many countries maintain border and domestic support measures of various types for their dairy sectors (see box, "Domestic Dairy Policies in Key Global Markets"). Of the three largest exporters, only the EU intervenes significantly in its dairy markets. Canada, the United States, and Japan also have significant domestic dairy policies, but all three countries are net importers of dairy products.

Dairy policies around the world are changing slowly, primarily as a result of the Uruguay Round of trade negotiations. The dominant border measures now in place are tariffs or tariff-rate quota systems, and they are at the core of many issues surrounding market access. Domestic dairy policies include mainly price support and institutionalized pricing systems, policies that have been called trade distorting in many circles. What would happen to global dairy markets and

Domestic Dairy Policies in Key Global Markets

In a recent analysis of trade liberalization, USDA developed a 12-country/region model of international dairy trade and identified border measures (tariffs and tariff-rate quotas) for all regions. Only four of the countries/regions—Canada, the European Union, Japan, and the United States—have domestic support or regulatory policies or programs in addition to border measures. Japan, however, receives more protection from border measures than from its many domestic support programs.

The principal types of policies and programs affecting dairy producers in these four countries/regions are as follows:

Canada
- Milk production/marketing quotas
- Classified pricing
- Price support (purchase or sales program for butter and nonfat dry milk)
- Subsidized exports of dairy products

European Union
- Milk production/marketing quotas
- Price support (intervention purchases of butter and nonfat dry milk)
- Subsidized exports of dairy products
- Consumer subsidies for some products

Japan
- Direct producer payments
- Subsidized manufacture of certain products
- Strict labeling program for dairy products
- Consumer subsidies for some products
- Subsidized input costs—environmental protection, insurance of animals

United States
- Direct producer payments
- Price support (purchase program for butter, cheese, and nonfat dry milk)
- Subsidized exports of dairy products
- Federal milk marketing orders

the U.S. dairy industry if all of these policies were stripped away?

Empirical analyses of international dairy markets suggest that a global liberalization of dairy policies eliminating all tariffs, quotas, export subsidies, and domestic supports would lead to a significant increase in the world market prices for dairy products. While the volume of trade would decline, primarily due to the elimination of export subsidies, the value of trade would increase.

Trade liberalization would generate relatively modest impacts on the U.S. dairy sector because of the large size of the U.S. market and high level of efficiency of U.S. dairy farmers. If the efficiency of the U.S. dairy sector continues to increase as it has in recent years, it is possible that American dairy producers and manufacturers could even gain from trade liberalization—analysis suggests that productivity increases as small as 1 percent a year would offset the impact of trade liberalization on U.S. milk production. The ongoing processes of technological change, globalization, and shifts in consumer demand are far more likely to affect the future of the U.S. dairy sector than changes in dairy or trade policy.

Challenges and Opportunities for the United States

The U.S. is a significant dairy market in the international arena—as an importer of certain products and, more recently, as a source of supplies for export by international dairy firms. Globalization of dairy markets provides a potential opportunity for producers of certain U.S. dairy products, such as dry milk powders. The sheer size of the U.S. domestic market and projected higher international prices, which could rise even more if the current round of trade negotiations leads to further trade liberalization, suggest that there may be additional opportunities for the U.S. dairy sector in international markets in the future.

Foreign direct investments in U.S. dairy product markets contribute to the continued strength of domestic markets for U.S. products produced from U.S. milk. Traditional methods of analyzing trade liberalization scenarios do not readily anticipate the effects of strategic decisions of firms in international markets. Because of international market dynamics, dairy trade liberalization, were it achieved, would foster both opportunities and challenges for U.S. milk producers and manufacturing firms.

As global dairy markets evolve, policies designed to limit foreign competition will become less relevant. Moreover, protectionist policies can be detrimental to a country's continued longrun prosperity as new opportunities are squandered. How trade policy supports U.S. dairy farm income is less clear today than in the past, given rapid changes in the structure of the industry. The efforts of U.S. milk suppliers, processors, and product marketers to remain competitive in a global setting are continuing to benefit U.S. dairy farmers and consumers.

This article is drawn from . . .

The ERS Dairy Briefing Room, at: www.ers.usda.gov/briefing/dairy/

Data may have been updated since publication. For the most current information, see www.ers.usda.gov/publications/agoutlook/aotables/.

Farm, Rural, and Natural Resources Indicators

	1990	2000	2001	2002	2003	2004	Annual percent change 1990-2000	2002-03	2003-04
Cash receipts ($ billion)	169.5	192.1	200.1	195.0	216.6	241.2	1.3	11.1	11.4
Crops	80.3	92.5	93.3	101.0	111.0	117.8	1.4	9.9	6.1
Livestock	89.2	99.6	106.7	94.0	105.6	123.5	1.1	12.3	17.0
Direct government payments ($ billion)	9.3	22.9	20.7	11.2	17.2	13.3	9.4	53.6	-22.7
Gross cash income ($ billion)	186.9	228.7	235.6	221.0	249.5	271.7	2.0	12.9	8.9
Net cash income ($ billion)	52.7	56.7	60.1	49.5	71.6	85.5	0.7	44.6	19.4
Net value added ($ billion)	80.8	91.9	95.0	78.6	101.2	125.9	1.3	28.8	24.4
Farm equity ($ billion)	702.6	1,025.6	1,070.2	1,110.7	1,180.8	1,293.9f	3.9	6.3	9.6
Farm debt-asset ratio	16.4	14.8	14.8	14.8	14.4	13.8f	-1.0	-2.7	-4.2
Farm household income ($/farm household)	38,237	61,947	64,117	65,757	68,515	87,072p	4.9	4.2	27.1
Farm household income relative to average U.S. household income (%)	103.1	108.6	110.2	113.7	116.0	na	0.5	2.0	na
Nonmetro-Metro difference in poverty rate (% points)	3.6	2.6	3.1	2.6	2.1	na	-3.2	-19.2	na
Cropland harvested (million acres)	310	314	311	307	315	312p	0.1	2.6	-1.0
USDA conservation program expenditures ($ bil.)[1]	3.0	3.3	3.7	4.2	4.3	5.1	1.0	2.4	18.6

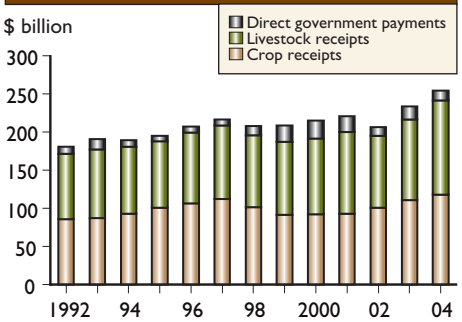
Food and Fiber Sector Indicators

U.S. gross domestic product ($ billion)	5,803	9,817	10,128	10,470	10,971	11,734	5.4	4.8	7.0
Food and fiber share (%)	7.9	5.8	5.8	5.8	4.9	na	-3.0	-15.5	na
Farm sector share (%)	1.3	0.7	0.7	0.7	0.8	na	-6.0	14.3	na
Total agricultural imports ($ billion)[1]	22.7	38.9	39.0	41.0	45.7	52.7	5.5	11.5	15.3
Total agricultural exports ($ billion)[1]	40.3	50.7	52.7	53.3	56.2	62.4	2.3	5.4	11.0
Export share of the volume of U.S. agricultural production (%)	18.2	17.6	17.6	16.7	17.9	16.3	-0.3	7.2	-8.9
CPI for food (1982-84=100)	132.4	167.9	173.1	176.2	180.0	186.2	2.4	2.2	3.4
Share of U.S. disposable income spent on food (%)	11.2	10.1	10.2	10.1	10.1	na	-1.0	0.0	na
Share of total food expenditures for at-home consumption (%)	55.4	53.3	53.9	53.8	53.1	na	-0.4	-1.3	na
Farm-to-retail price spread (1982-84=100)	144.5	210.3	215.4	221.2	225.6	232.9	3.8	2.0	3.2
Total USDA food and nutrition assistance spending ($ billion)[1]	24.9	32.6	34.2	38.0	41.8	46.2	2.7	10.0	10.5

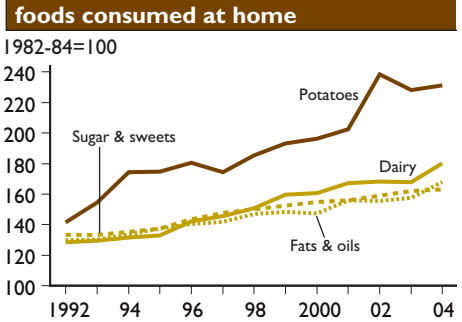
f = Forecast. p = Preliminary. na = Not available.

[1] Based on October-September fiscal years ending with year indicated.

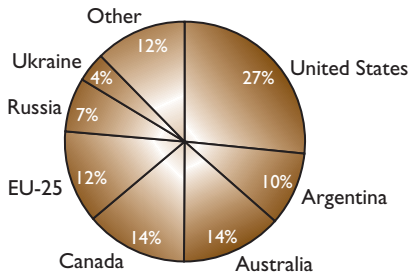
Cash receipts from farming, 1992-2004



Consumer price indexes for selected foods consumed at home



The world's largest wheat exporters, 2004/05

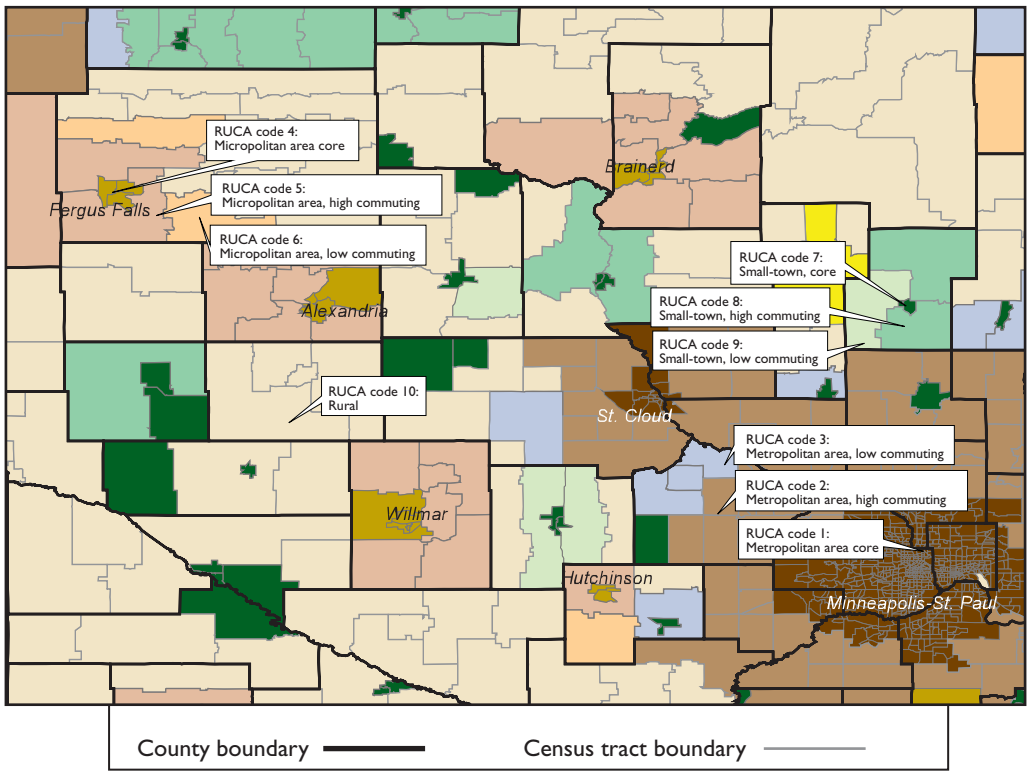


For more information, see www.ers.usda.gov/amberwaves/

Behind the Data

Rural-Urban Commuting Areas

Rural-urban commuting areas in central Minnesota



Source: USDA, Economic Research Service.

ERS researchers and others who study conditions in rural America most often refer to conditions in nonmetropolitan (nonmetro) counties. Rural research and policymaking rely heavily on county-based approaches, but demand is increasing for greater geographic detail. The ERS rural-urban commuting area (RUCA) codes provide a flexible scheme for such a delineation because they employ a smaller unit of analysis—the census tract. The most recent version classifies census tracts using data from the 2000 decennial census, and is patterned after the metropolitan (metro) county classification system defined by the Office of Management and Budget (OMB).

As defined by OMB, metropolitan (metro) areas include central counties with one or more urbanized areas of 50,000 or more people and outlying counties that are economically tied to the central counties as indicated by high work commuting. The remaining nonmetro counties are subdivided into two types: micropolitan (micro) areas and all remaining noncore counties.

RUCA codes classify census tracts using the same concepts of population density, urbanization, and daily commuting as OMB. The RUCA codes adopted terminology to highlight this underlying connectedness. Metro core areas identify continuously built-up areas of 50,000 or more people and micro cores contain populations of 10,000-49,999. By using census tracts instead of counties as building blocks for RUCA codes, small town core areas with populations between 2,500 and 10,000 could be added.

The classification contains two levels. At the first level, census tracts are classified based on the size and direction of their *primary* (largest) commuting flows (codes 1-10). Metro, micro, and small town cores (codes 1, 4, and 7) are defined as census tract equivalents of central counties. *High commuting* (codes 2, 5, and 8) means that the largest commuting share is at least 30 percent to a nearby metro, micro, or small town core. *Low commuting* (codes 3, 6, and 9) refers to cases where the single largest commuting flow is to a core but is less than 30 percent. The last of the general classification codes (10) identifies *rural* tracts where the primary flow is local or to another rural tract.

At the second level, the *primary* RUCA codes are subdivided to identify areas where classifications overlap, based on the size and direction of the *secondary*, or second largest, commuting flow. For example, *rural* tracts for which the primary commuting share is local but more than 30 percent also commute to a nearby core are coded 10.1 for metro, 10.2 for micro, and 10.3 for small town cores. Few, if any, research or policy applications would likely need the full set of 30 codes. Rather, the system allows for the selective combination of codes to meet varying needs.

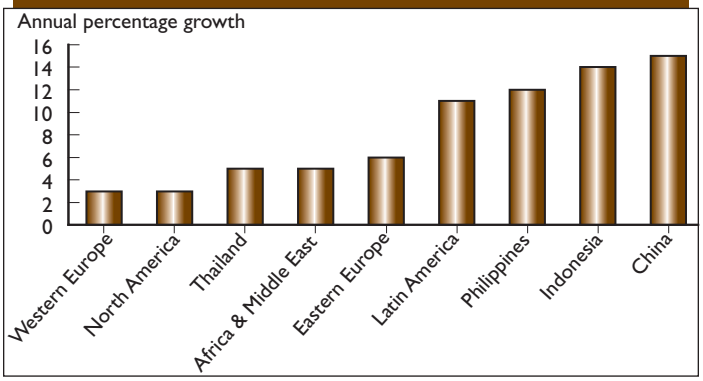
John Cromartie, jbc@ers.usda.gov

For more information . . .

Measuring Rurality: Rural-Urban Commuting Area Codes:
www.ers.usda.gov/briefing/rurality/ruralurbancommutingareas/

Markets and Trade

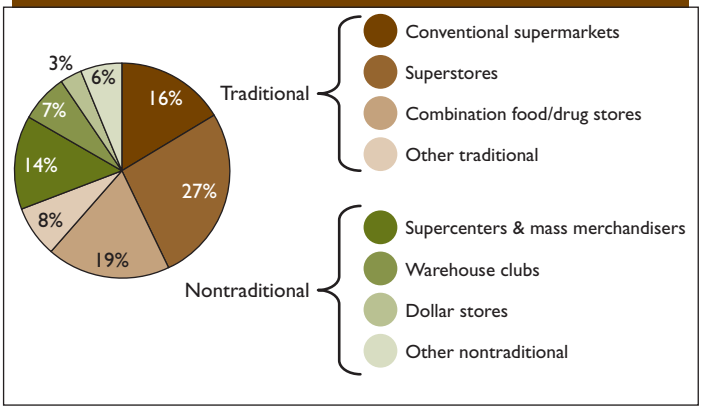
Consumption of dairy products grew rapidly between 1998 and 2004, especially in the emerging markets of Latin America and Asia



Source: USDA, Economic Research Service.

Diet and Health

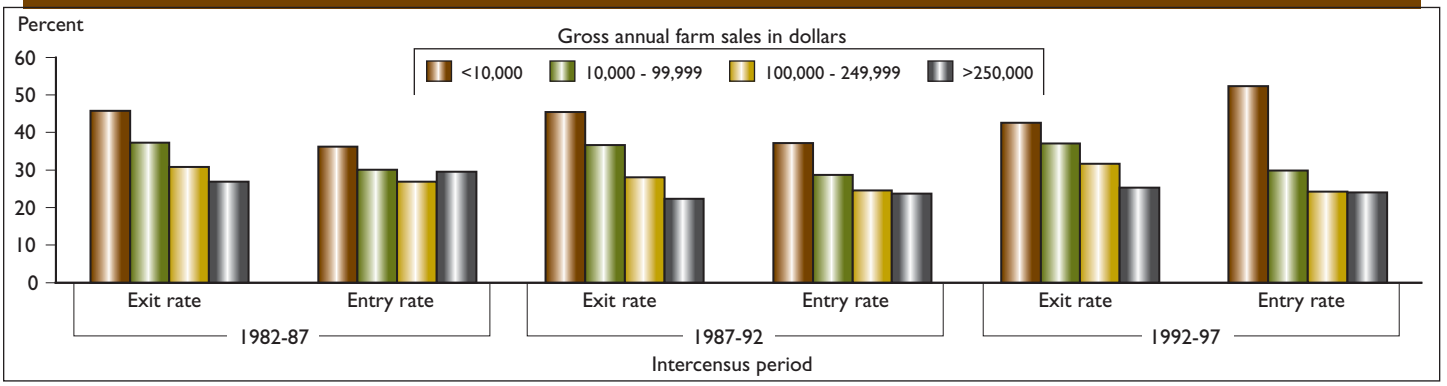
Nontraditional food retailers accounted for 31 percent of the $497 billion consumers spent for food at home in 2003



Source: Calculated by USDA, Economic Research Service using ACNielsen Homescan data.

Farms, Firms, and Households

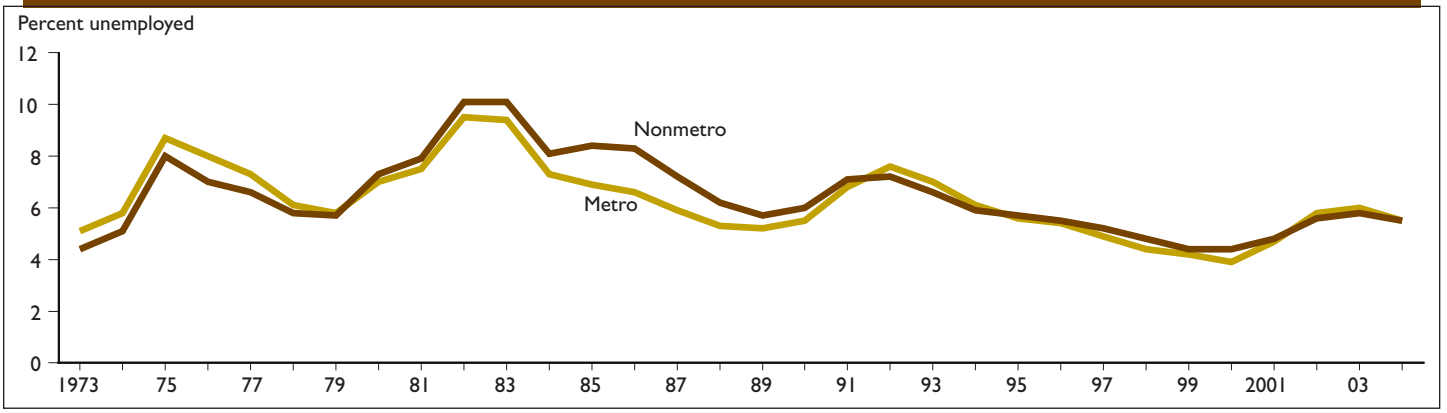
Operator exit and entry rates by farm sales class



Source: Compiled by USDA, Economic Research Service from the 1997 Census of Agriculture Longitudinal File. Notes: Exit and entry rates are the rates at which farm operators either leave or enter the business of farming.

Rural America

Metro and nonmetro unemployment, 1973-2004



Source: Prepared by USDA, Economic Research Service using data from the Bureau of Labor Statistics.

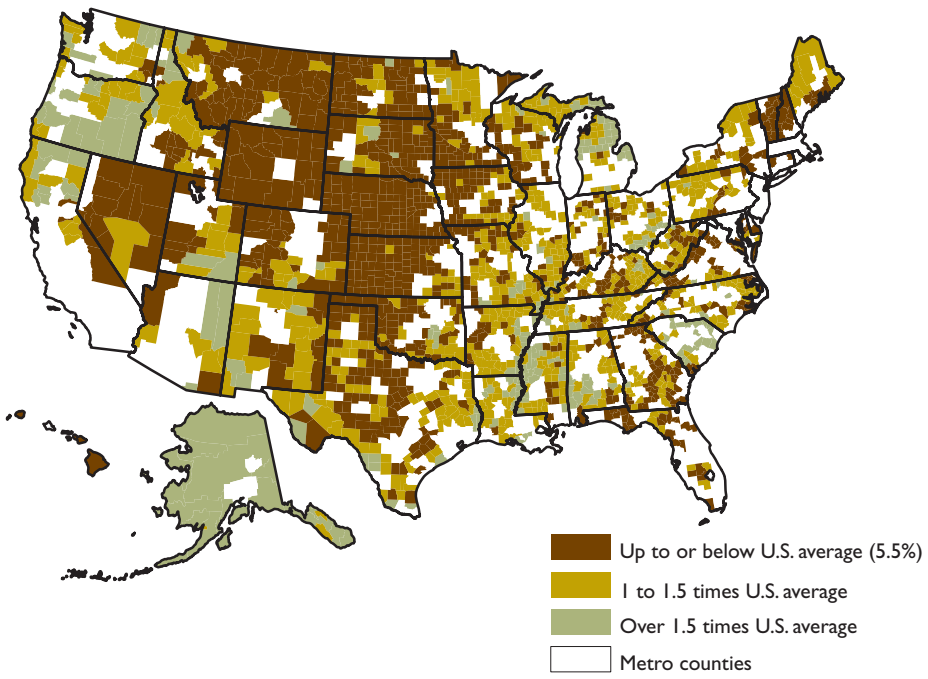
On the Map

Nonmetro unemployment improves slightly in 2004

The nonmetro unemployment rate improved slightly in 2004 from the previous year, falling from 5.8 to 5.5 percent. Nonmetro unemployment rates ranged from a high of 20.5 percent in the Wade Hampton Census Area in Alaska to a low of 1.6 percent in McPherson County in Nebraska. The highest unemployment rates in 2004 were concentrated in the Northwest, Alaska, the Mississippi Delta, and Northern Michigan.

Timothy Parker,
tparker@ers.usda.gov

Nonmetro unemployment, 2004



Source: Prepared by USDA, Economic Research Service using data from the Bureau of Labor Statistics.

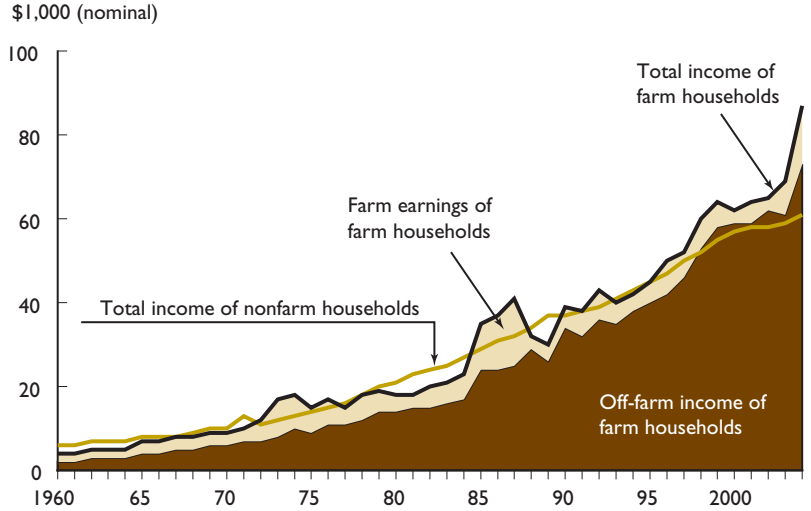
In the Long Run

Farm household income has grown in absolute terms, as well as relative to nonfarm households. The trend in farm household income growth has generally tracked the less volatile path of nonfarm household income growth. Since 1996, farm household incomes have exceeded nonfarm household incomes by 5 percent or more.

Farm households have a diversified earnings portfolio, consisting of farm business income, off-farm wage and self-employment income, and passive earnings from farm and nonfarm investments. While all sources of income contribute to household well-being, the driver behind the growth of farm household incomes is off-farm income. In fact, over half of farm household income was earned as wages and salaries from off-farm employment.

Ashok Mishra,
amishra@ers.usda.gov

Farm operator household income by source compared with all U.S. household income, 1960-2004



Source: Various sources. For details, see www.ers.usda.gov/briefing/farmstructure/data/historic.htm

Current Activities


PhotoDisc

Project Management Certifications Awarded

Five ERS employees were recently certified as Project Management Professionals by the Project Management Institute. Andrew Kerns, Peter Kostik, Gina Pearson, Douglas Parry, and Stephen Peterson successfully completed the requirements for certification and will now use their expertise to lead information technology improvement efforts at ERS. In particular, they will upgrade the bandwidth of ERS's communications lines to allow transmission of large amounts of data from external sources to support ERS research projects. They will also implement a content management system to enhance presentation of research data and publications on the ERS website and further improve the Agricultural Resource Management Survey and Market Analysis and Trade Electronic Reporting System data tools. **Ron Bianchi, rbianchi@ers.usda.gov**

Research Project Wins Award

In September 2005, ERS received the 2005 Outstanding Public Issues Education Program award from the National Public Policy Education Committee (NPPEC) for the research project, "What the Public Values About Farmland." This multi-year effort, spawned from a research planning workshop co-sponsored by ERS and Farm Foundation, consisted of several workshops and research projects that were designed to created a dialogue between economic researchers and the end users of research results at the State and local levels. The project was led by individuals from ERS; USDA's Cooperative State Research, Education, and Extension Service; USDA's Natural Resources Conservation Service; and several land-grant universities. The purpose of the program was to commission high-quality research on valuing the nonmarket amenities provided by farmland and put it in the hands of land use planners and other policymakers. **Mary Ahearn, mahearn@ers.usda.gov**

Recent Meetings

Organic Sector Innovations

In October 2005, ERS co-sponsored an interdisciplinary workshop on organic agriculture, "Innovations in Organic Marketing, Technology, and Research," along with the USDA's Risk Management Agency; USDA's Cooperative State Research, Education, and Extension Service; and Farm Foundation. The U.S. organic sector has experienced growing pains and low adoption levels for some crops during the past few years, as well as rapidly growing consumer demand. Speakers from USDA, universities, State agencies, organic associations, and other organizations joined over 100 participants in exploring key challenges and opportunities for organic producers and processors. Speakers' presentations and a workshop summary are available on the Farm Foundation website, www.farmfoundation.org. **Catherine Greene, cgreene@ers.usda.gov,** and **Lydia Oberholtzer, loberholtzer@ers.usda.gov**

Global Food Markets

In October 2005, ERS hosted the 46th annual conference of the Food Distribution Research Society, in Washington, DC. "Global Food Markets, New Challenges, New Opportunities" was the theme of the 3-day conference, which featured panel sessions covering such topics as firm market access strategies, product quality and safety, global food market strategies for improving diet and health, and the prospects for further growth in global food markets. Panel participants included members of the food industry, university researchers, and government agencies. Invited papers and research presentation abstracts will be published in the *Journal of Food Distribution Research, Proceedings* issue. **Phil Kaufman, pkaufman@ers.usda.gov**

Impacts of Tobacco Program Elimination

In September 2005, ERS and Farm Foundation co-hosted a workshop in Washington, DC, "Impacts of the Tobacco Quota Buyout." The tobacco industry is facing unprecedented change as the quota and price support program is replaced by free-market policies. With implementation of the Fair and Equitable Tobacco Reform Act of 2004, U.S. tobacco acreage is projected to fall by 25 percent in 2005. This workshop brought together leaf dealers, manufacturers, and representatives from trade associations, government, cooperatives, and higher education to provide insights into such questions as: Which producers have left tobacco production and where is production expanding? How are lower prices, combined with increasing efficiencies, affecting the competitiveness of U.S. tobacco in world markets? How are manufacturers and leaf dealers changing procurement policies? Insights developed through this workshop will be used to guide future research. **Tom Capehart, thomasc@ers.usda.gov**

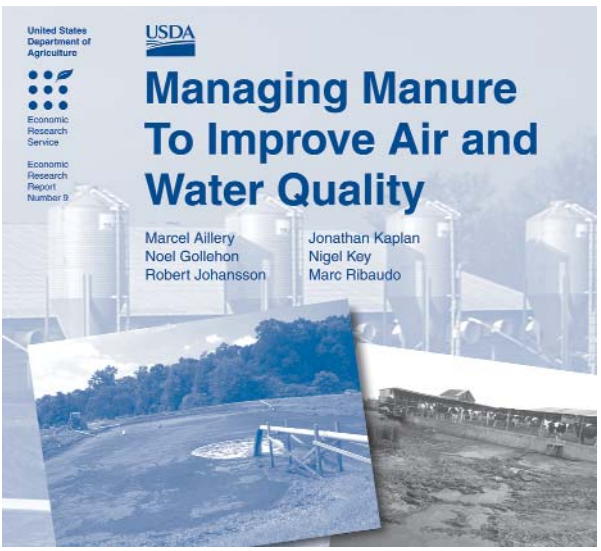
Second Annual Taylor Lecture

In September 2005, ERS hosted the second annual lecture in the Henry C. Taylor Lecture series. A pioneer in the field of agricultural economics, Taylor helped to create the Bureau of Agricultural Economics, the predecessor of ERS, and served as its first director. Professor Vernon L. Smith, a 2002 Nobel Laureate, traced the development of experimental auctions to simulate and study the functioning of markets. Recognizing that Taylor was also the first leader of the Farm Foundation, the event concluded with a presentation of the Taylor Commemorative Plaque to Smith by current Farm Foundation President Walt Armbruster. This annual lecture series is designed to promote discourse on contemporary economic issues of interest to agricultural economists within and outside ERS and USDA. **Susan Offutt, soffutt@ers.usda.gov**

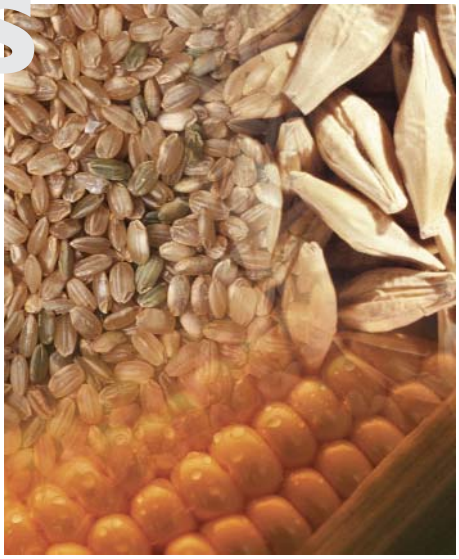
New Releases

Animal Agriculture Affects Air and Water Quality

Animal agriculture produces a variety of pollutants. These pollutants pose challenges to farmers and to resource managers because they can affect multiple resources (air and water), while environmental laws typically focus on only a single resource. Regulations to restrict emissions from animal operations to water might inadvertently increase emissions to the air and vice versa. A recent ERS report, *Managing Manure To Improve Air and Water Quality* (www.ers.usda.gov/publications/err9/), assesses the economic and environmental tradeoffs between water and air quality policies that could require the animal sector to take potentially costly measures to abate pollution. The findings are based on a farm-level analysis of hog farms, a national analysis that includes all sectors, and a regional assessment in an area with high animal numbers. **Marc Ribaudo, mribaudo@ers.usda.gov**



The citations here and in the rest of this edition are just a sample of the latest releases from ERS. For a complete list of all new ERS releases, view the calendar on the ERS website: www.ers.usda.gov/calendar/



Feed Grains Database Redesigned

The ERS Feed Grains Database (www.ers.usda.gov/data/feedgrains/) has recently been expanded and redesigned to offer users more statistics on corn, grain sorghum, barley, oats, hay, and related items. In addition to supply (beginning stocks, production, and imports), demand (food use; industrial uses; seed, feed and residual uses; exports; and ending stocks), and price data (farm and market prices), users can now query the database for quantities fed, feed-price ratios, and much more. Data are monthly, quarterly, and/or annual, depending on the data series. **Allen Baker, albaker@ers.usda.gov**

Commodity Background Reports

ERS recently released *Peanut Backgrounder* (www.ers.usda.gov/publications/ocs/oct05/ocs05i01/), the first of a series of nine background reports on key U.S. commodities to be issued over the next few months. Published every 5 years, these backgrounders provide a concise overview of important sectors of the agricultural economy. They contain information on production areas, new uses, export markets, policy changes, farm households, and other information that provides insights into key issues confronting each commodity. **Erik Dohlman, edohlman@ers.usda.gov**, and **Linwood Hoffman, lhoffman@ers.usda.gov**

Current Indicators on Rural America

The latest edition in the annual *Rural America At A Glance* series (www.ers.usda.gov/publications/eib4/) includes the most current indicators of social and economic conditions in rural areas, for use in developing policies and programs to assist rural people and their communities. This edition focuses on the importance of recreation and tourism for rural areas, rural employment growth, rural poverty, and the effect of immigration on rural population growth. **Karen Hamrick, khamrick@ers.usda.gov**


Photo: Kathy Kassel, USDA/ERS

Jim Blaylock

If, as Napoleon observed, an army marches on its stomach, then economists march on their data. A recent $3.5-million ERS research and data initiative exemplifies this point. These new data and analyses will help us fulfill ERS's mandate to understand the relationships among eating, economics, health, consumer behavior, and the food system. Jim Blaylock, Associate Director of ERS's Food Economics Division, is one of several ERSers who made this initiative a reality. As Jim notes, "These new data and surveys will provide real-time information on consumers' purchasing responses to price changes, health concerns, new products, biotechnology, and food safety incidents."

Jim's leadership is a continuation of his long-time interest in answering the simple, skeptics might even say naïve, question, "Why do consumers eat what they do?" By the 1990s, it was apparent that eating was such a complex phenomenon that the old standbys of prices and income were not adequately explaining eating trends. Jim and his colleagues began to incorporate consumers' nutrition knowledge and attitudes, among other explanatory factors, into models explaining food choices. Of course, the importance of understanding food consumption only grew along with the Nation's waistline.

Jim's research interests and mentoring efforts have shaped much of the work of the Division, especially in the area of food choices. Through direct collaborations and, more recently, through intellectual leadership, Jim has helped guide the Division's food policy research program. Highlighting these endeavors were projects on consumer-driven agriculture (as featured in an earlier issue of *Amber Waves*; see www.ers.usda.gov/amberwaves/april03/features/consumerdrivenag.htm), work exploring 100 years of eating in America as part of USDA's Millennium celebration, and efforts highlighting the role of economics in the obesity debate.

As Associate Director, Jim uses his insights and lively writing style to make the Division's analyses more accessible and visible to a wider audience. Jim challenges researchers to not just report on trends in food spending, marketing, and eating patterns but to "explain to our audience the forces behind the trends and what they mean for agricultural producers, food companies, and consumers."

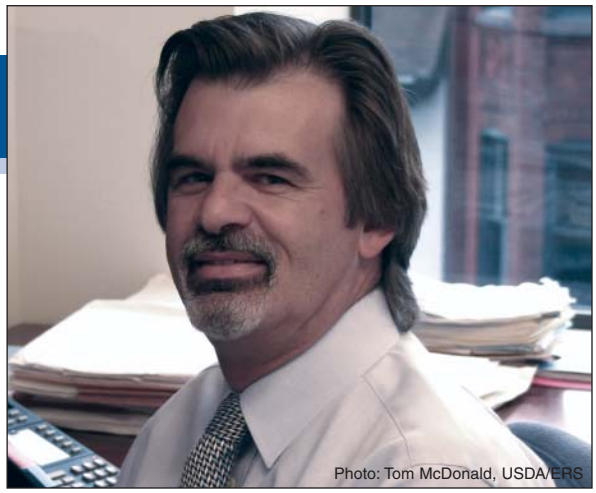


Photo: Tom McDonald, USDA/ERS

Ron Durst

The impact of Federal estate and gift taxes on farmers' ability to transfer farm assets to younger generations has been a major concern for farmers and policymakers. In recent years, increasing farm size and rising land values have intensified this concern. As USDA's expert on how tax policy affects farmers and agriculture, Ron Durst, a senior ERS economist, estimated the impact of Federal estate and gift tax changes enacted in 2001. Using USDA's farm household survey data and the ERS farm typology, Ron determined that the tax policy changes would result in a large drop in both the number of farm estates required to file a return and that owe taxes. These results have been cited by senior USDA officials, congressional staff, and the farm press on a number of occasions.

Since joining ERS in 1980, Ron's interests and responsibilities have covered all aspects of Federal taxation including income, estate and gift, and social security policies. Most recently, Ron, who holds degrees in agricultural economics and tax law, has been assessing the potential for farm savings accounts to help farmers manage the variability in their farm income and in evaluating the effects of Federal tax legislation for farmers. "Taxes can affect farm operations and farm families very differently than they can nonfarm businesses and other taxpayers. Understanding those differences is crucial to assessing the impacts of tax policy proposals on the agricultural sector," notes Ron. An article in this issue of *Amber Waves* is drawn from his work on taxes, which can be accessed on the ERS Briefing Room on Federal Taxes (www.ers.usda.gov/briefing/federaltaxes/).

Ron's expertise on tax issues is widely recognized among senior USDA officials and on Capitol Hill. "He has consistently provided policy officials the very best insights on the expected behavioral changes by farmers and others in response to changes in tax policy," says Keith Collins, USDA's Chief Economist. Ron has received several awards over the years, including a USDA Superior Service Award for his analysis of the implications of the Tax Reform Act of 1986 for farmers and rural America.